Checker Light		Trouble	Condition
10 Injection signal	○	No blink	Cranking

① Check injection signal with checker:
Depress the computer injection signal check switch and confirm that light 10 blinks while cranking engine.

NO BLINK

BLINK

② Check voltage at resistor +B terminal.
STD: 10 – 13 V (IG S/W ON)

ZERO V → Check and repair the following as required:
- Poor electrical connection at connector.
- +B wire open from connector to G_2 terminal of ignition switch.

OK

③ Check voltage of each (–) resistor terminal.
STD: 10 – 13 V (IG S/W ON)

ALL ZERO V → Replace resistor.

ALL LOW VOLTAGE → Check wires No. 10 and No. 20 (individually) between each injector and harness computer connector for a short circuit.

ALL OK

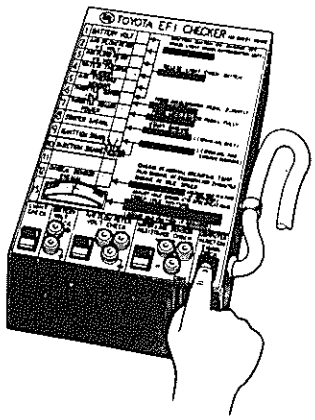
Check the resistance of wires E_{01} and E_{02} (individually) between the harness connector and the vehicle frame.

→ Check wires No. 10 and No. 20 (individually) between each injector and harness computer connector for an open circuit.

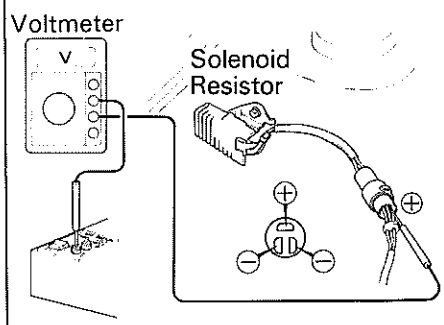
∞ Ω (INFINITE) → Repair wiring as required.

ZERO Ω → Try another computer.

①

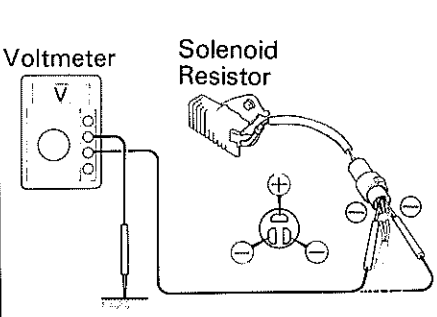


②



FI0349

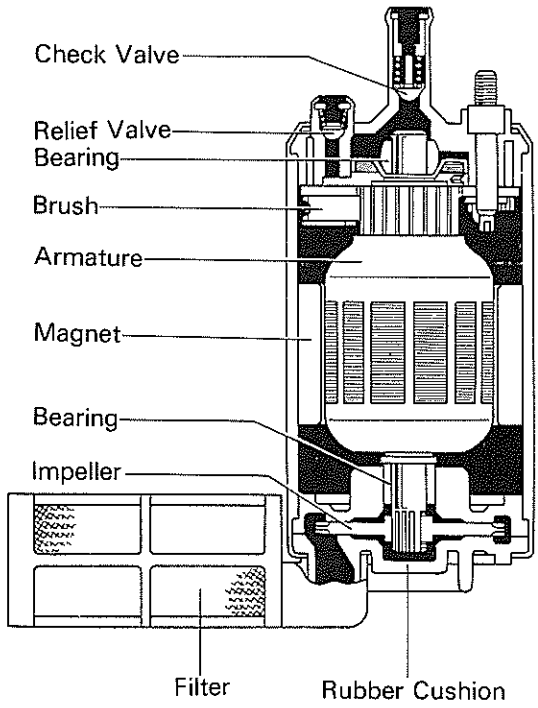
③

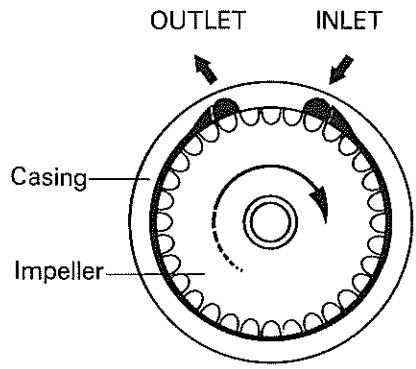


FI0566

FUEL SYSTEM

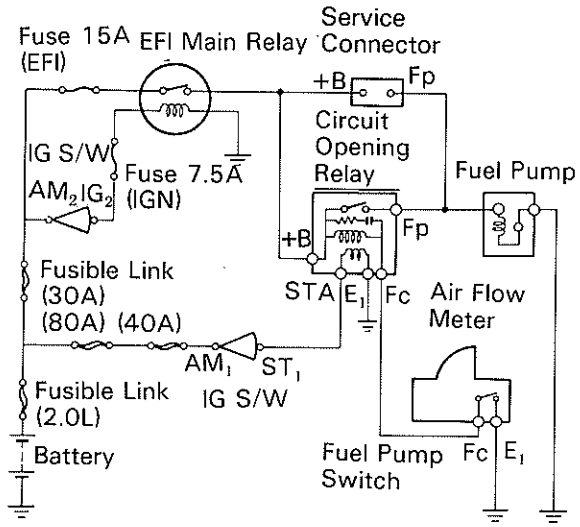
Fuel Pump





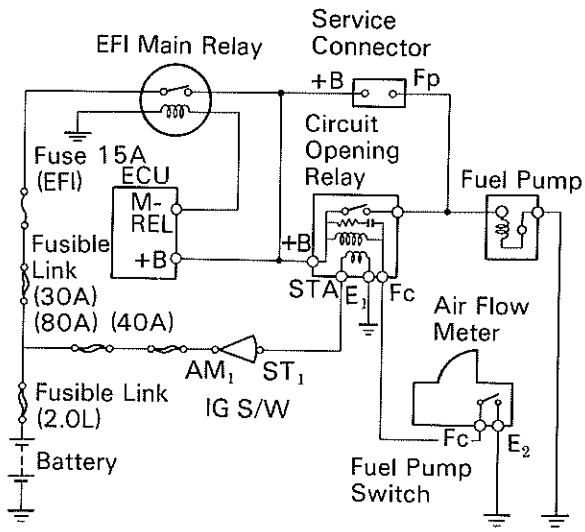
B5769 B5435

1G-E

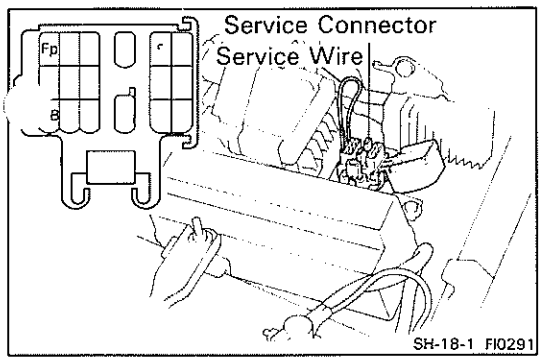


FI0568

1G-GE



FI0567



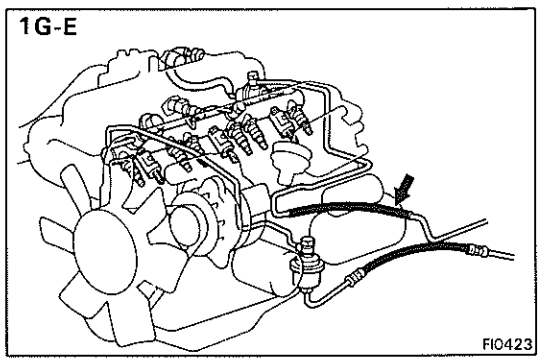
ON-VEHICLE INSPECTION

1. CHECK FUEL PUMP OPERATION

(a) Turn the ignition switch ON.

NOTE: Do not start the engine.

(b) Short Fp and +B terminals of the fuel pump service connector (for diagnosis).



(c) Check that there is a pressure in the pressure regulator fuel return hose.

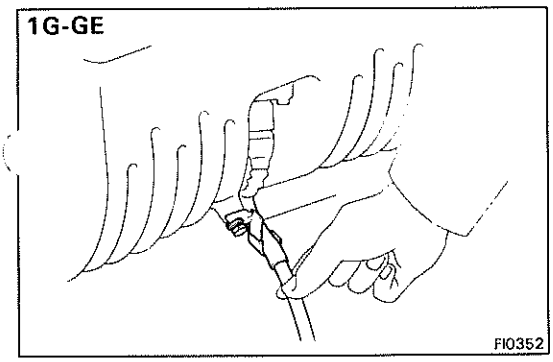
NOTE: At this time, you will hear fuel return noise from the pressure regulator.

(d) Remove the service wire.

(e) Turn the ignition switch OFF.

If there is no pressure, check the following parts.

- Fusible link
- Fuse (EFI 15A, IGN 7.5A)
- Circuit opening relay
- Fuel pump
- Wiring connections

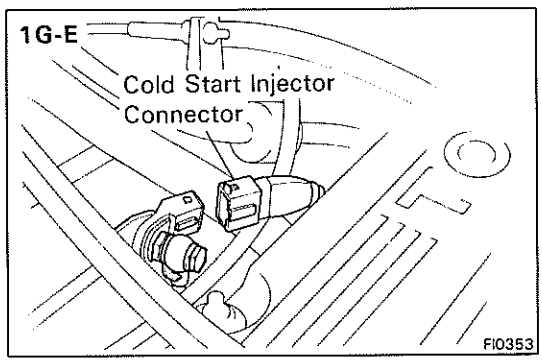


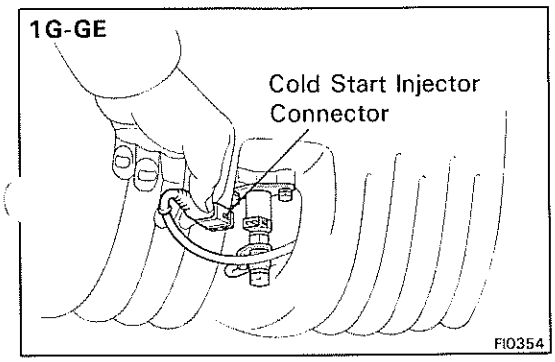
2. CHECK FUEL PRESSURE

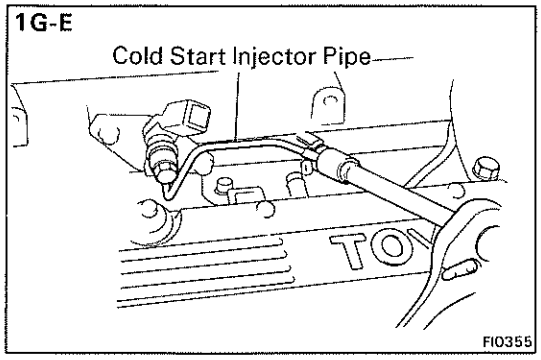
(a) Check that battery voltage above is 12 volts.

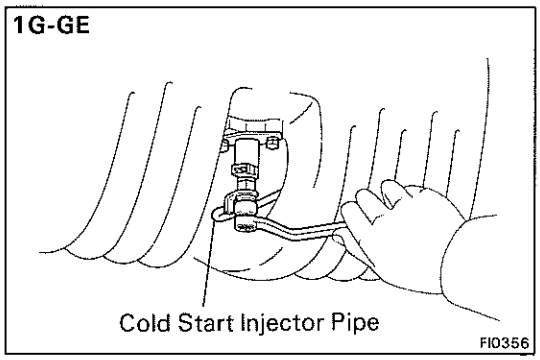
(b) Disconnect the battery ground cable.

(c) Disconnect the wiring connector from the cold start injector.





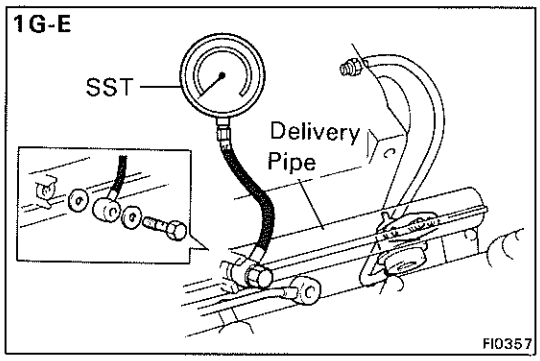




(d) Place a suitable container or shop towel under the cold start injector pipe.

(e) Remove the cold start injector pipe.

(f) Drain the fuel in the delivery pipe.



(g) Install a gasket, SST, another gasket and union bolt to the delivery pipe as shown in the figure.

SST 09268-45011

(h) Wipe off any splattered gasoline.

(i) Reconnect the battery cable.

(j) Short terminals Fp and +B of the service connector.

NOTE: The service connector is located near the No. 2 injection block.

(k) Turn on the ignition switch.

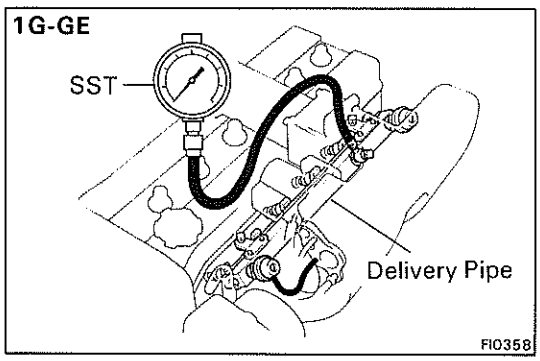
(l) Measure the fuel pressure.

Fuel pressure: 2.3 – 2.7 kg/cm² (33 – 38 psi, 226 – 265 kPa)

If high pressure, replace the pressure regulator.

If low pressure, check the following parts.

- Fuel hoses and connection
- Fuel pump
- Fuel filter
- Pressure regulator



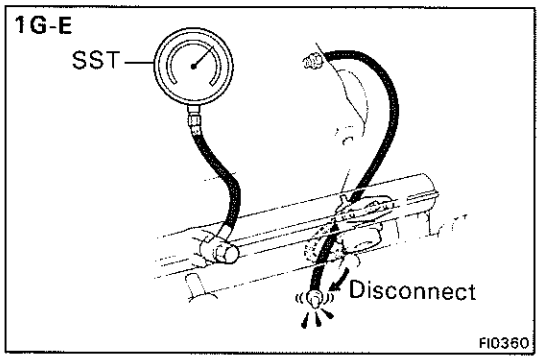
(m) Remove the service wire from the service connector.

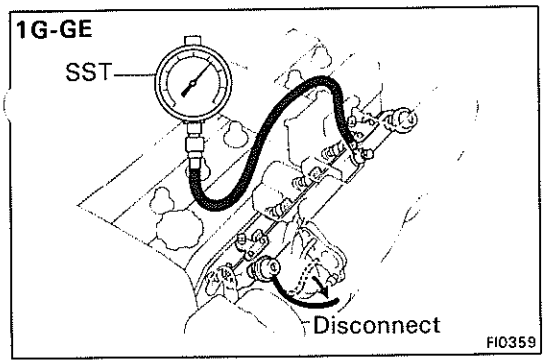
(n) Start the engine.

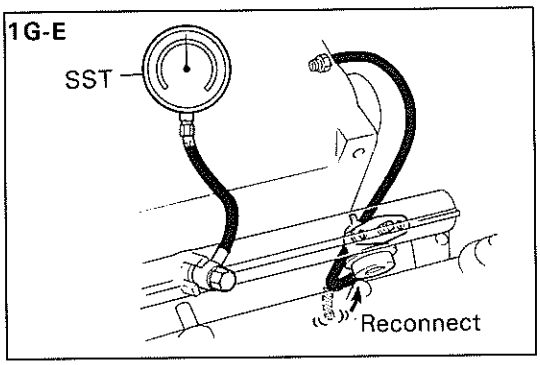
(o) Disconnect the vacuum sensing hose from the pressure regulator and pinch it.

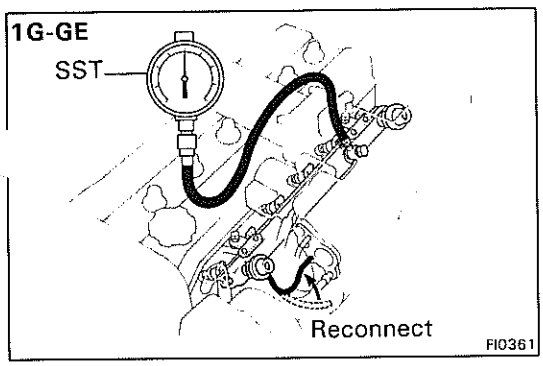
(p) Measure the fuel pressure at idling.

Fuel pressure: 2.3 – 2.7 kg/cm² (33 – 38 psi, 226 – 265 kPa)









(q) Reconnect the vacuum sensing hose to the pressure regulator.

(r) Measure the fuel pressure at idling.

Fuel pressure: 1.8 – 2.2 kg/cm² (26 – 31 psi, 177 – 216 kPa)

If not pressure, check the vacuum sensing hose and pressure regulator.

(s) Stop the engine. Check that the fuel pressure remains above 1.5 kg/cm² (21 psi, 147 kPa) for 5 minutes after the engine is turned off.

If not with in specification, check the fuel pump, pressure regulator and/or injectors.

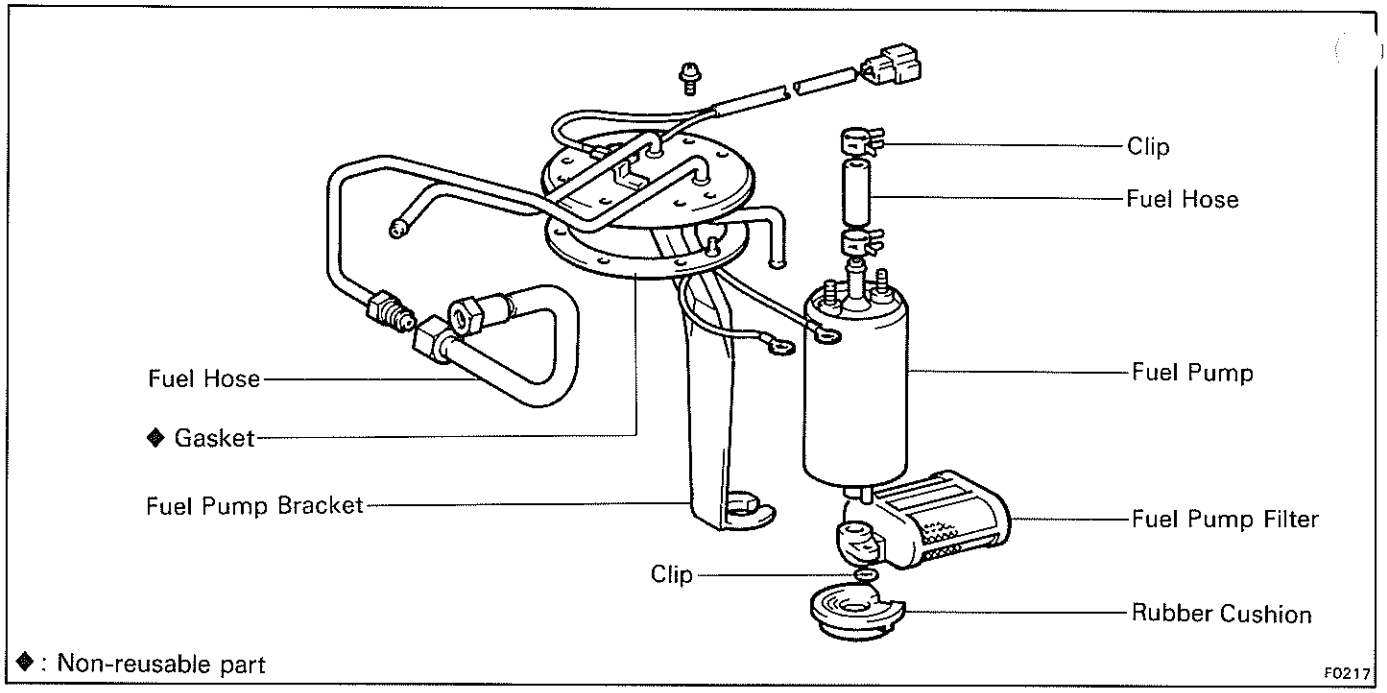
(t) After checking fuel pressure, disconnect the battery ground cable and carefully remove the SST to prevent gasoline from splashing.

(u) Using new gaskets, reconnect the cold start injector hose to the delivery pipe.

(v) Connect the wiring connector to the cold start injector.

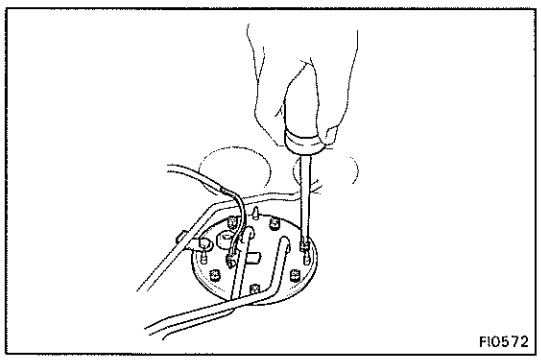
(w) Check for fuel leakage.

REMOVAL OF FUEL PUMP

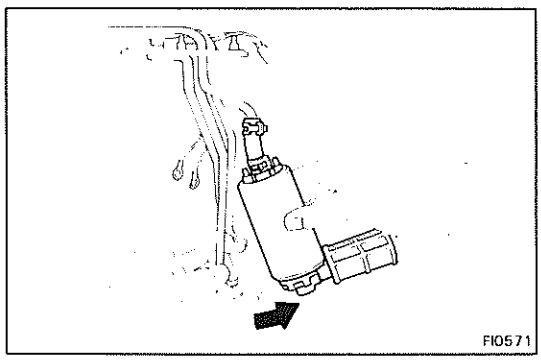


WARNING: Avoid smoking and open flame when working on the fuel pump.

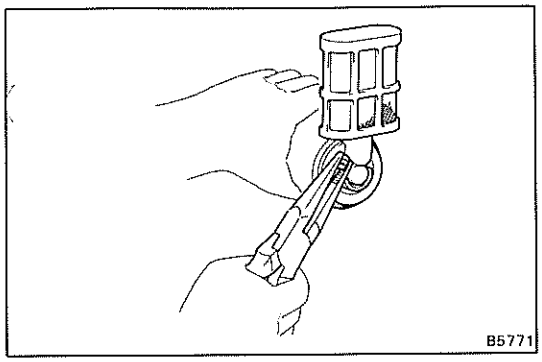
1. **DRAIN GASOLINE FROM FUEL TANK**
2. **REMOVE FUEL TANK**



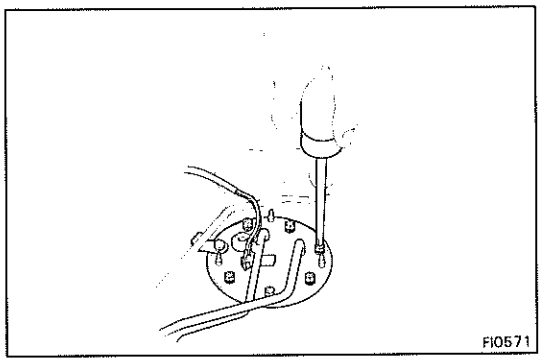
3. **REMOVE FUEL PUMP BRACKET FROM FUEL TANK**
   (a) Remove the seven screws.
   (b) Pull out the fuel pump bracket.



4. **REMOVE FUEL PUMP FROM FUEL PUMP BRACKET**
   (a) Remove the two nuts and disconnect the wires from the fuel pump.
   (b) Pull off the lower side of the fuel pump from the bracket.
   (c) Remove the fuel pump from the fuel hose.



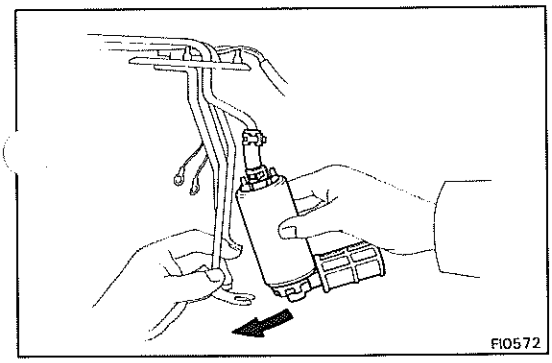
5. REMOVE FUEL PUMP FILTER FROM FUEL PUMP
   (a) Remove the rubber cushion.
   (b) Remove the clip and pull out the filter.



INSTALLATION OF FUEL PUMP

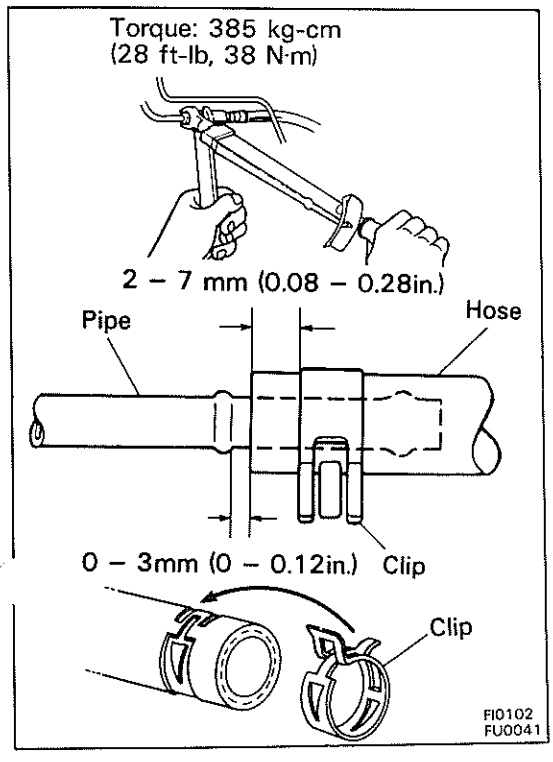
(See page FI-90)

1. INSTALL FUEL PUMP FILTER TO FUEL PUMP
2. INSTALL FUEL PUMP TO FUEL PUMP BRACKET
   (a) Insert the outlet port of the fuel pump into the fuel hose.
   (b) Install the rubber cushion to the lower side of the fuel pump.
   (c) Push the lower side of the fuel pump, together with the rubber cushion, into the fuel pump bracket.



3. INSTALL FUEL PUMP BRACKET
   (a) Place the bracket with a new gasket on the fuel tank.
   (b) Install and torque the seven screws.

   Torque: 40 kg-cm (35 in.-lb, 3.9 N·m)



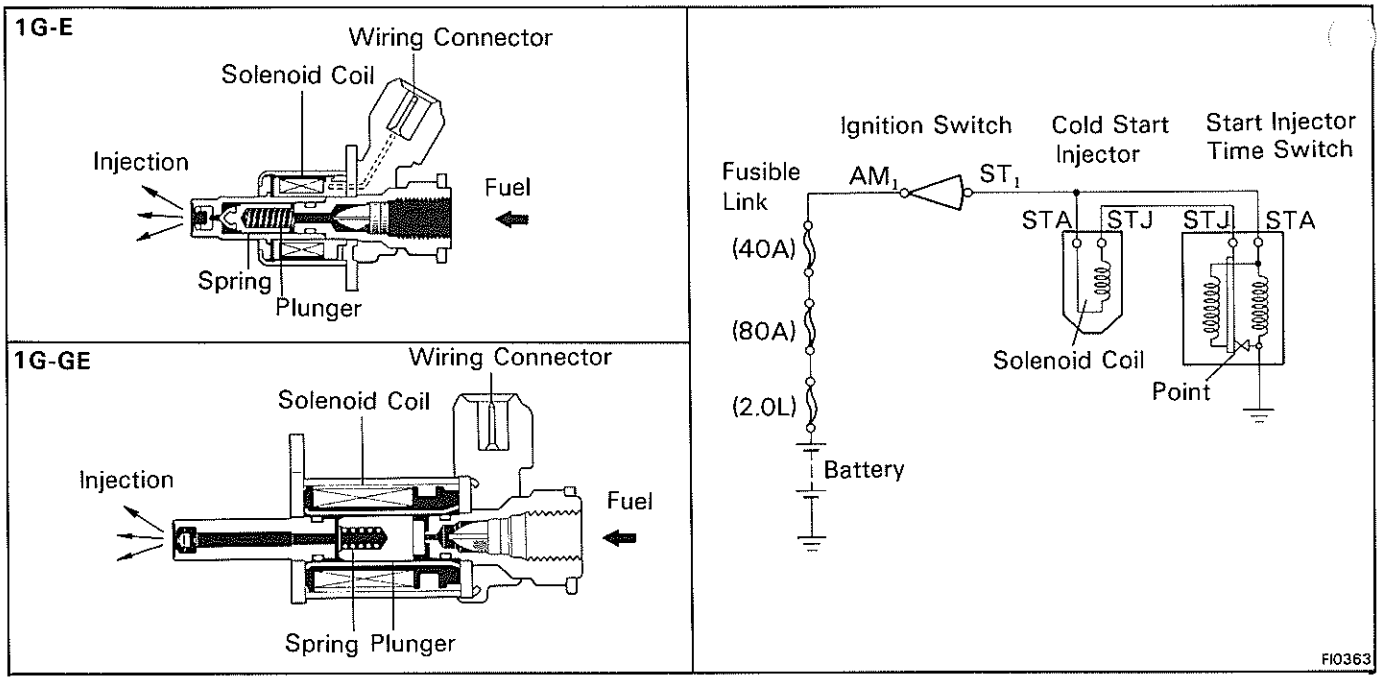
4. INSTALL FUEL TANK

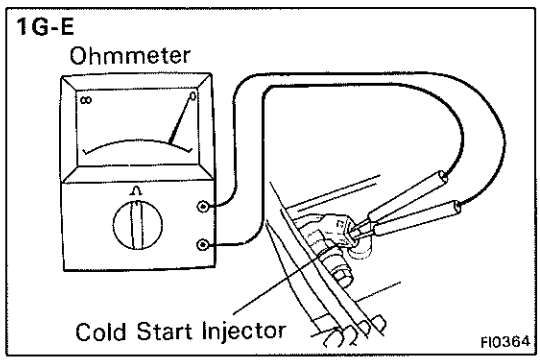
   CAUTION:

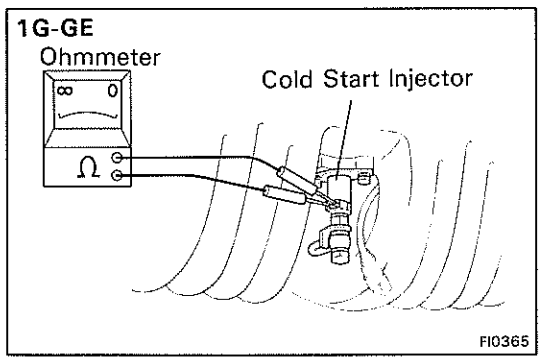
   - **Tighten the fuel tank mounting bolts, etc. to the specified torque.**
   - **Tighten the pipe and flare nut type hose to the specified torque.**
   - **Push in the pipe and insert-type hose to the specified position, and install the clip to the specified location.**
   - **If reusing the hose, reinstall the clip at the original location.**

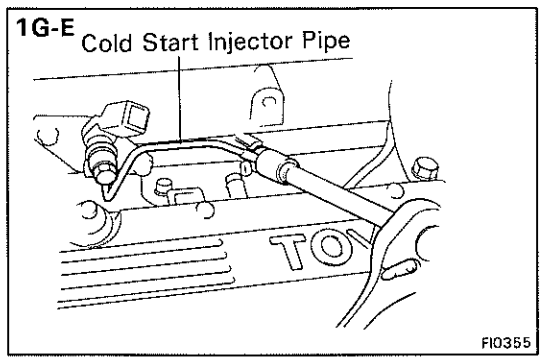
5. REFILL WITH GASOLINE

Cold Start Injector









ON-VEHICLE INSPECTION

MEASURE RESISTANCE OF COLD START INJECTOR

(a) Disconnect the cold start injector connector.

(b) Using an ohmmeter, check the resistance of injector.

Resistance: 3 – 5 Ω

(c) Connect the cold start injector connector.

REMOVAL OF COLD START INJECTOR

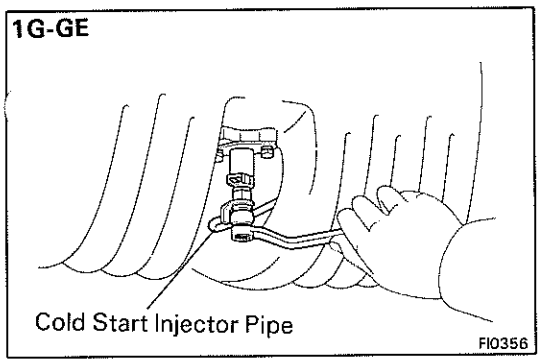
1. DISCONNECT COLD START INJECTOR CONNECTOR

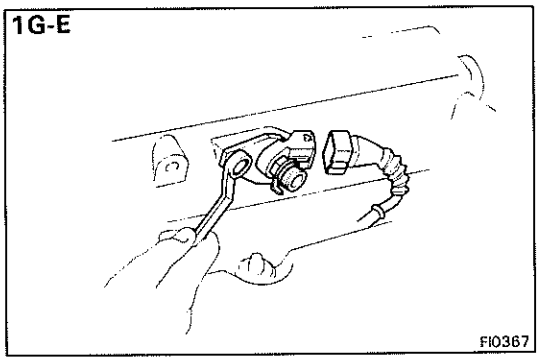
2. REMOVE COLD START INJECTOR PIPE

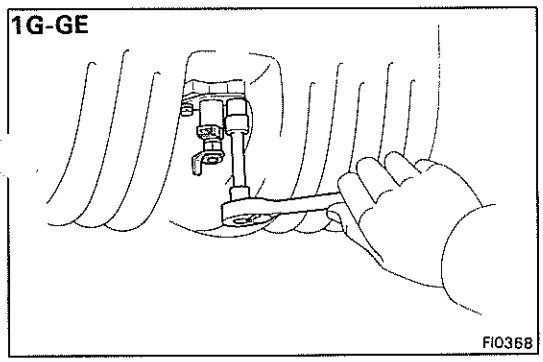
(a) Put a suitable container or shop towel under the cold start injector pipe.

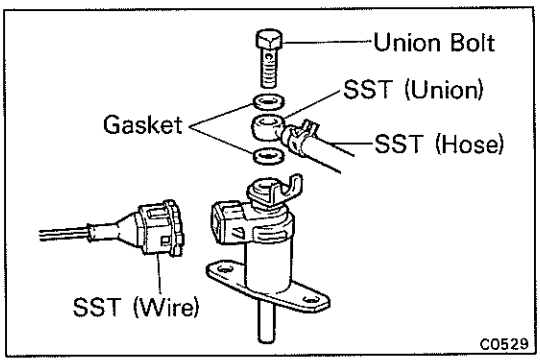
(b) Remove the two union bolts and the cold start injector pipe with the gaskets.

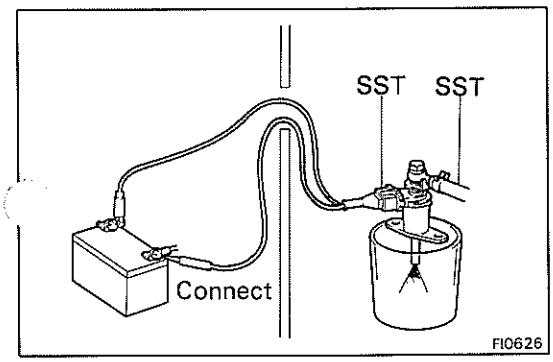
NOTE: Slowly loosen the union bolts.











3. **REMOVE COLD START INJECTOR**

Remove the two nuts and cold start injector with the gasket.

INSPECTION OF COLD START INJECTOR

CHECK INJECTION OF COLD START INJECTOR

(a) Install the gasket, SST (two unions), another gasket and two union bolts to the delivery pipe and injector.

(b) Connect the SST (hose) from the unions.

SST 09268-41045

(c) Connect the SST (wire) to the injector.

SST 09842-30050

WARNING: Position the injector as far away from the battery as possible.

(d) Put a container under the injector.

(e) Turn the ignition switch ON.

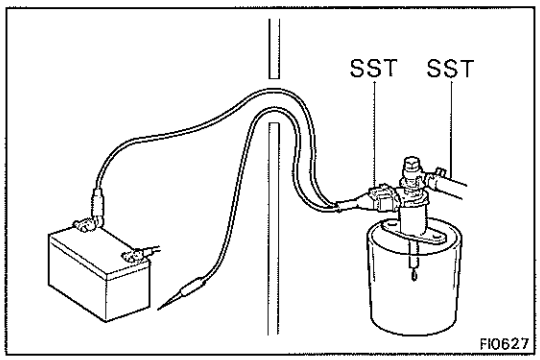
NOTE: Do not start the engine.

(f) Short F_P and +B terminals of the fuel pump service connector (for diagnosis).

(g) Connect the test probes of the SST to the battery and check that the fuel spray is as shown.

SST 09842-30050

NOTE: Perform this check within the shortest possible time.

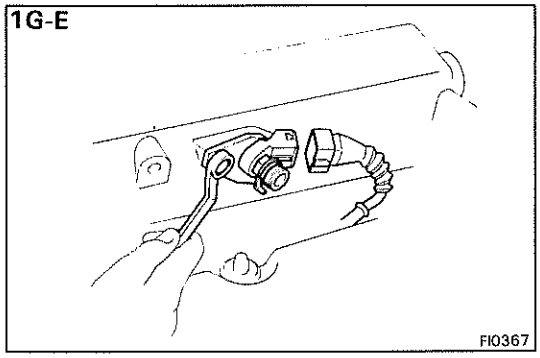


(h) Disconnect the test probes from the battery and check that fuel does not leak from the injector.

Fuel drop: Less than one drop of fuel per minute.

(i) After checking, restore the following to the previous state.

- Fuel pump check connector
- Ignition switch
- SST
- Cold start injector
- Injector wiring

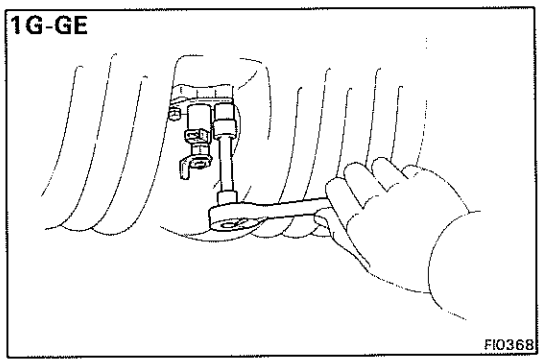


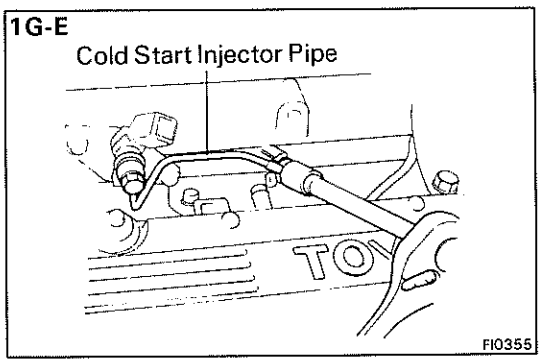
INSTALLATION OF COLD START INJECTOR

1. INSTALL COLD START INJECTOR

Place on a new gasket and install the cold start injector with the two nuts.

Torque: 55 kg-cm (48 in.-lb, 5.4 N·m)





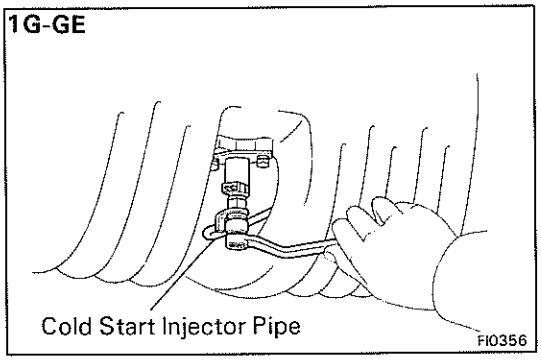
2. INSTALL COLD START INJECTOR PIPE

Using new gaskets, connect the cold start injector pipe to the delivery pipe and cold stary injector. Install the union bolts.

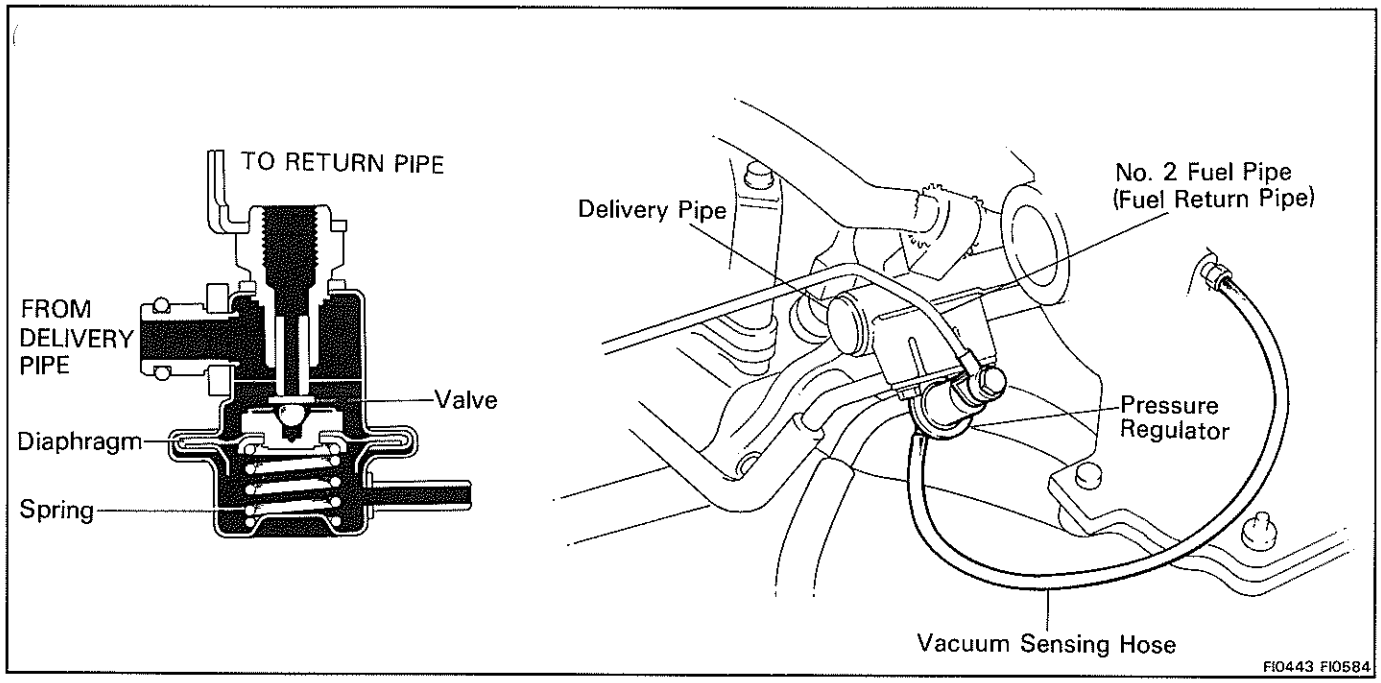
Torque: 180 kg-cm (13 ft-lb, 18 N·m)

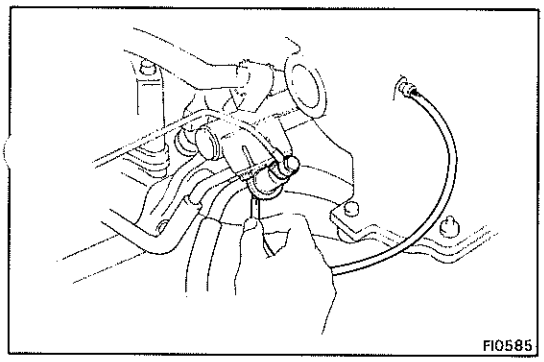
3. CONNECT COLD START INJECTOR CONNECTOR

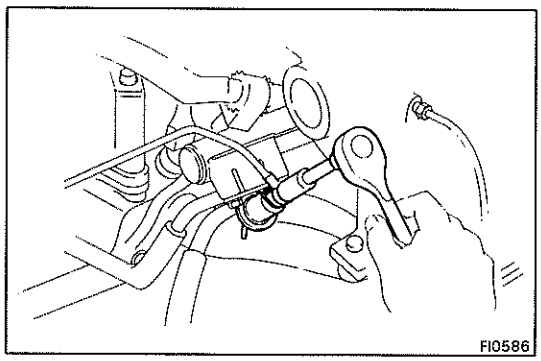
4. CHECK FOR FUEL LEAKAGE (See page FI-9)

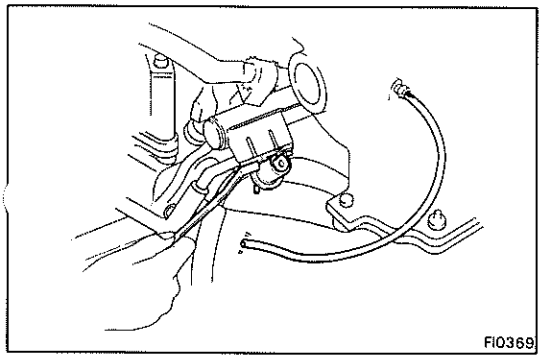


Pressure Regulator (1G-E)









ON-VEHICLE INSPECTION

CHECK FUEL PRESSURE (See page FI-87)

REMOVAL OF PRESSURE REGULATOR

1. **DISCONNECT VACUUM SENSING HOSE**

2. **DISCONNECT NO. 2 FUEL PIPE**
   (a) Place a suitable container or shop towel under the pressure regulator.
   (b) Disconnect the fuel hose from the pressure regulator.

3. **REMOVE PRESSURE REGULATOR**
   Remove the two bolts and the pressure regulator.

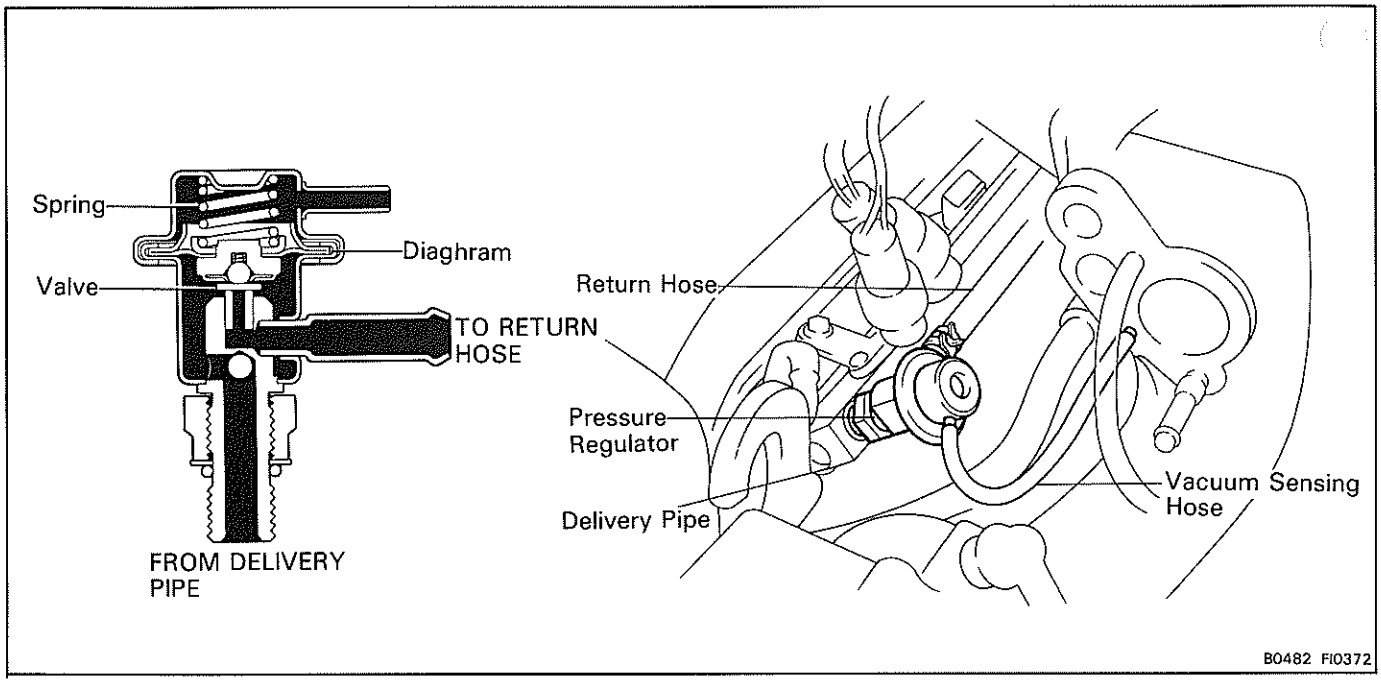
INSTALLATION OF PRESSURE REGULATOR

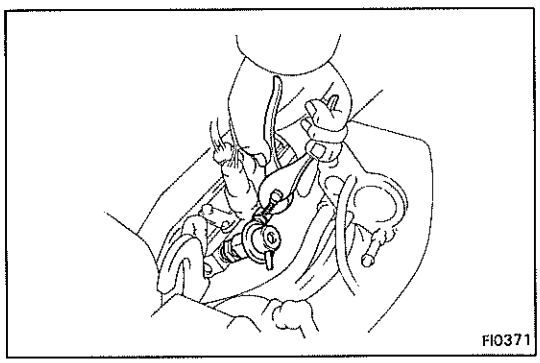
1. **INSTALL PRESSURE REGULATOR**
   (a) Install the pressure regulator with two bolts.
   Torque: 75 kg-cm (65 ft-lb, 7.4 N·m)

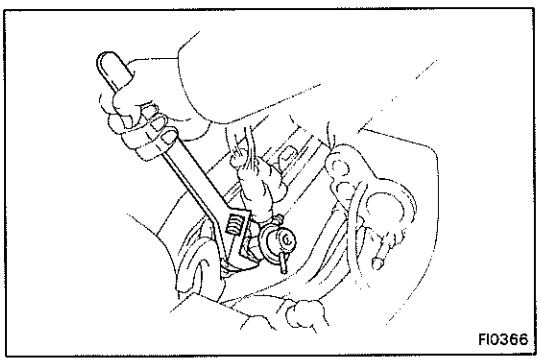
2. **CONNECT NO. 2 FUEL PIPE**
   Install a new gasket, pipe, another gasket and union bolt to the pressure regulator.
   Torque the union bolt.
   Torque: 180 kg-cm (13 ft-lb, 18 N·m)

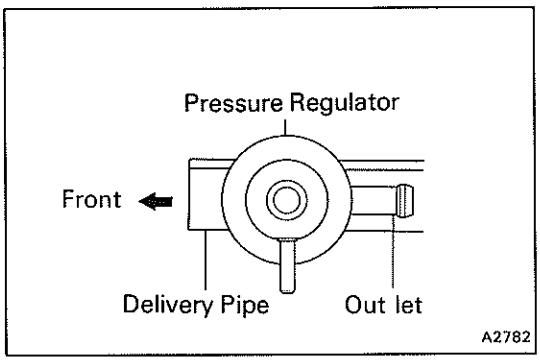
3. **CONNECT VACUUM SENSING HOSE**

Pressure Regulator (1G-GE)









ON-VEHICLE INSPECTION

CHECK FUEL PRESSURE (See page FI-87)

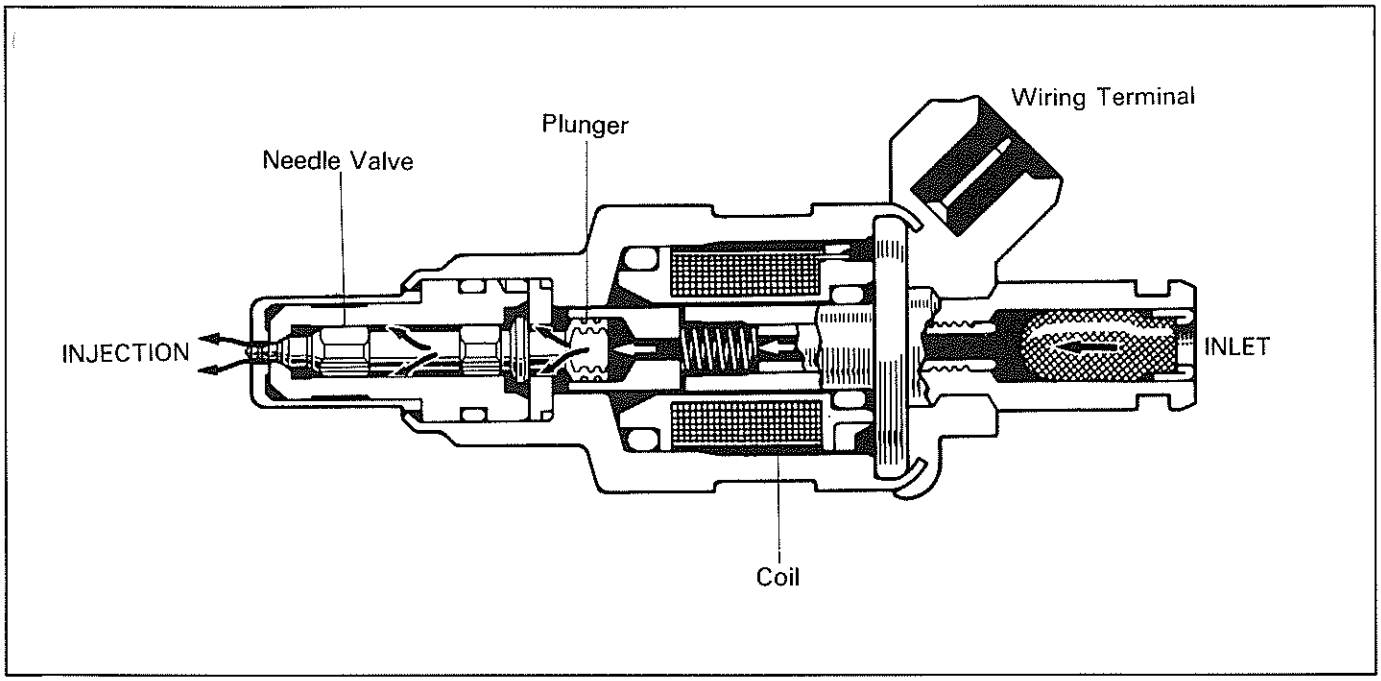
REMOVAL OF PRESSURE REGULATOR

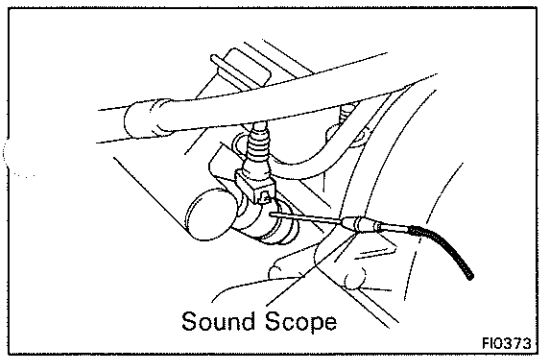
1. **DISCONNECT VACUUM SENSING HOSE**
2. **DISCONNECT FUEL HOSE**
   (a) Place a suitable container or shop towel under the pressure regulator.
   (b) Disconnect the fuel hose from the pressure regulator.
3. **REMOVE PRESSURE REGULATOR**
   Loosen the lock nut, and remove the pressure regulator.

INSTALLATION OF PRESSURE REGULATOR

1. **INSTALL PRESSURE REGULATOR**
   (a) Fully loosen the lock nut of the pressure regulator.
   (b) Thrust the pressure regulator completely into the delivery pipe by hand.
   (c) Turn the pressure regulator counterclockwise until the outlet faces in the direction indicated in the figure.
   (d) Torque the lock nut.
   Torque: 300 kg-cm (22 ft-lb, 29 N·m)
2. **CONNECT FUEL HOSE**
3. **CONNECT VACUUM SENSING HOSE**

Injector



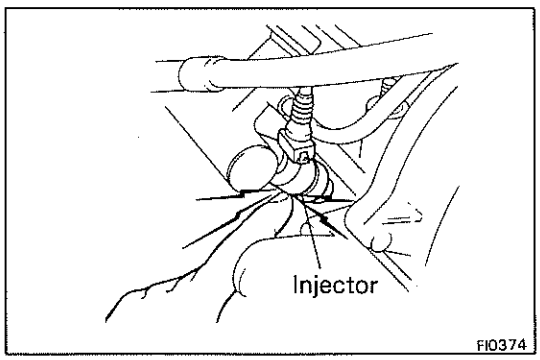


ON-VEHICLE INSPECTION

1. CHECK INJECTOR OPERATION

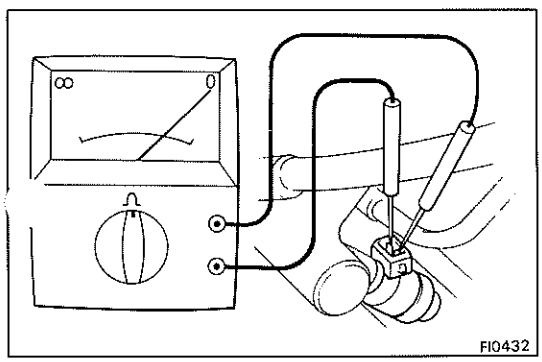
Check the operating sound from each injector.

(a) With the engine running or cranking, use a sound scope to check that there is normal operating noise in proportion to engine rpm.



(b) If a sound scope is not quailable, you can check the injector operation with your finger.

If no sound or an unusual sound is heard, check the wiring connector, injector, resistor or injection signal from the computer.

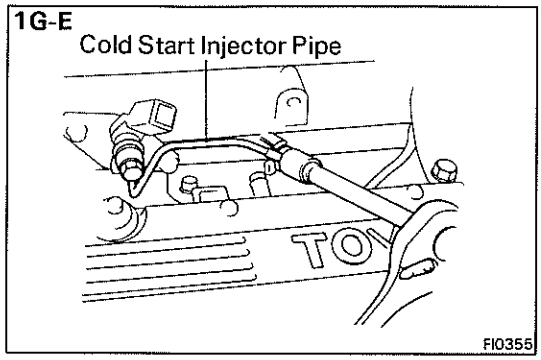


2. MEASURE RESISTANCE OF INJECTOR

(a) Unplug the wiring connector from the injector.

(b) Using an ohmmeter, check the continuity of both terminals.

Resistance: 1.5 – 3.0 Ω

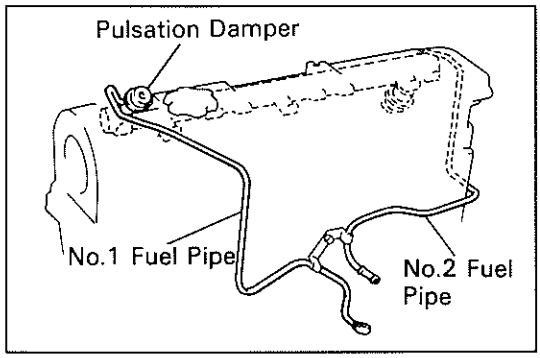


REMOVAL OF INJECTOR (1G-E)

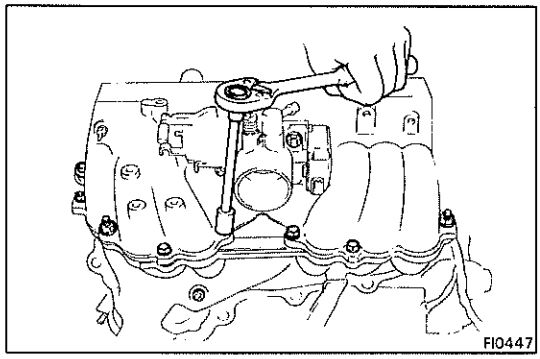
1. REMOVE PCV HOSE AND VACUUM HOSES

2. REMOVE COLD START INJECTOR PIPE

Remove two union bolts, pipe and gaskets.



3. REMOVE NO. 1 AND NO. 2 FUEL PIPES WITH PULSATION DAMPER



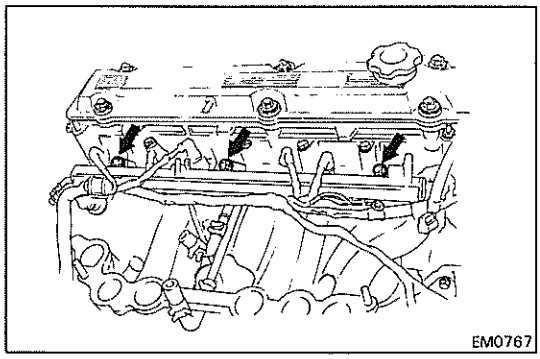
4. REMOVE AIR INTAKE CHAMBER

(a) Remove two air intake chamber stays.

(b) Disconnect the two connectors from the cold start injection and throttle position sensor.

(c) Disconnect the No. 2 water by-pass pipe hose from the air valve.

(d) Remove the two nuts and five bolts, and remove the air intake chamber and gasket.



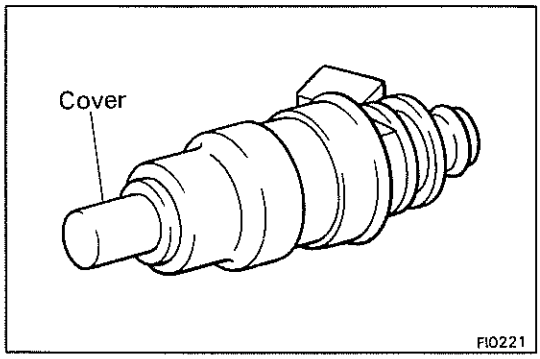
5. REMOVE DELIVERY PIPE WITH INJECTORS

(a) Remove the three bolts and thinner spacers, and then the delivery pipe with injectors.

(b) Remove the six insulators, three thicker spacers and two collars from the cylinder head.

NOTE:

- When renoving the delivery pipe, be careful not to drop the injectors.
- Do not remove the injector cover.



6. REMOVE INJECTORS

Pull out the injectors from the delivery pipe.

NOTE: Do not remove the injector cover.

REMOVAL OF INJECTOR (1G-GE)

1. **DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY**

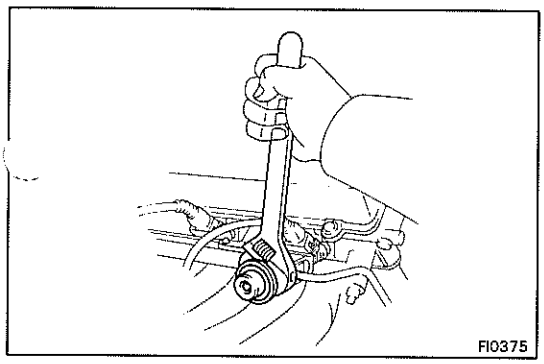
2. **DRAIN COOLANT**

3. **DISCONNECT FOLLOWING HOSES:**
   (a) PCV hose from cylinder head cover.
   (b) Vacuum sensing hose from pressure regulator.
   (c) Fuel return hose from pressure regulator.

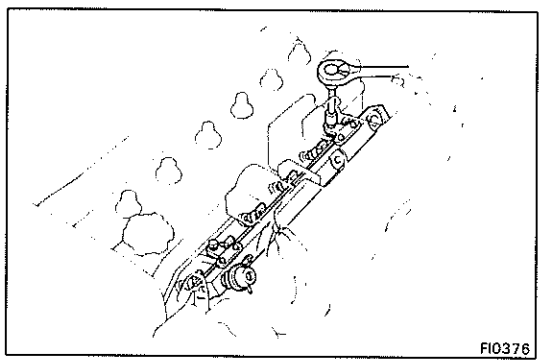
4. **REMOVE AIR INTAKE CONNECTOR AND THROTTLE BODY**

5. **REMOVE COLD START INJECTION PIPE**
   (See page FI-92)

6. **DISCONNECT INJECTOR CONNECTORS**


FI0375

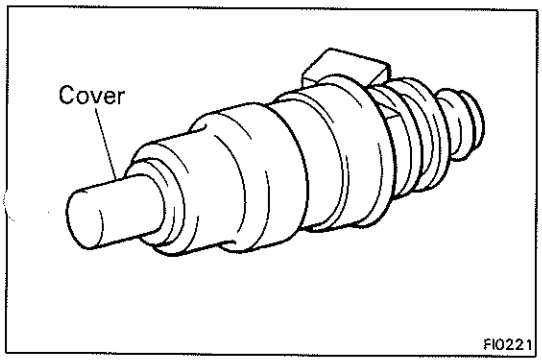
7. **DISCONNECT FUEL INLET PIPE**
   (a) Remove the two clamp nuts.
   (b) Remove the pulsation damper, union bolts, gasket and fuel pipe.


FI0376

8. **REMOVE DELIVERY PIPE**
   (a) Remove the two bolts, and then remove the delivery pipe with the injectors.

   NOTE: When removing the delivery pipe, be careful not to drop the injectors.

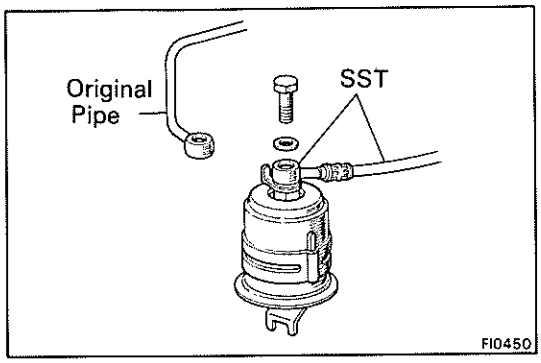
   (b) Remove the six insulators and two collars from the cylinder head.

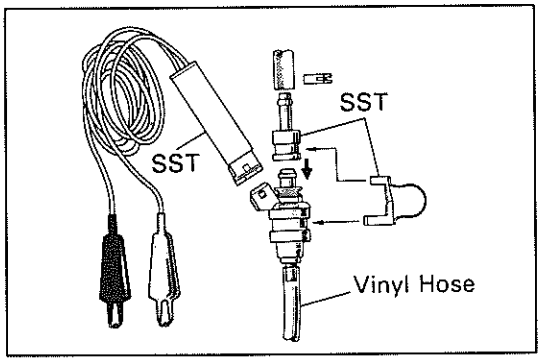


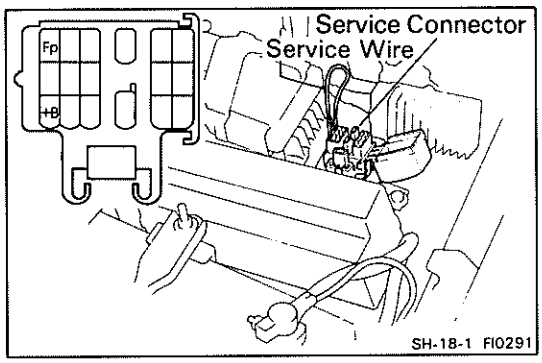
FI0221

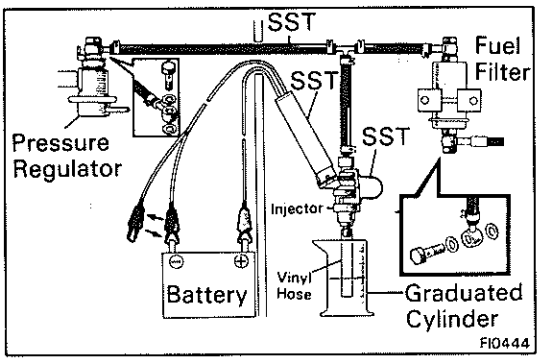
9. **REMOVE INJECTORS**
   Pull out the injectors from the delivery pipe.

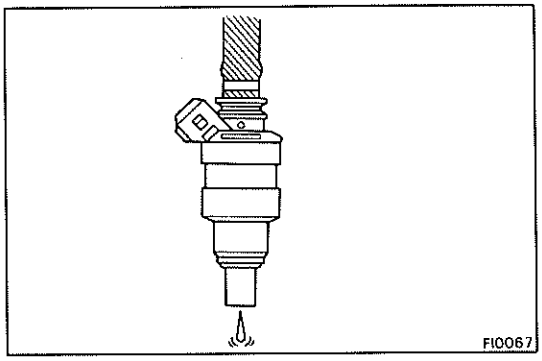
   NOTE: Do not remove the injector cover.











INSPECTION OF INJECTOR

1. TEST INJECTION OF INJECTORS

WARNING: Keep clear of sparks during the test.

(a) Connect the SST to the fuel filter outlet.

SST 09268-41045

(b) Connect the SST to the pressure regulator and the injector.

SST 09268-41045

(c) Hold the injector and hose with SST.

SST 09842-30020

(d) Put the injector into the graduated cylinder.

NOTE: Install a suitable vinyl hose onto the injector to prevent gasoline from splashing out.

(e) Connect the ground cable to the battery.

(f) Turn the ignition switch ON.

NOTE: Do not start the engine.

(g) Using a service wire, short both terminals of the fuel pump check connector.

NOTE: The fuel pump will operate.

(h) Connect the SST to the battery for 15 seconds and measure the injection volume with a graduated cylinder.

Test each injector two or three times. If not within specified volume, replace the injector.

SST 09842-30020

Volume: 1G-E 30 — 40 cc/15 sec. (1.8 — 2.4 cu in.)
1G-GE 40 — 50 cc/15 sec. (2.4 — 3.1 cu in.)

Difference between each injector: Less than 6 cc (0.37 cu in.)

2. CHECK LEAKAGE

(a) In the condition above, disconnect the SST from the battery and check for fuel leakage from the injector nozzle.

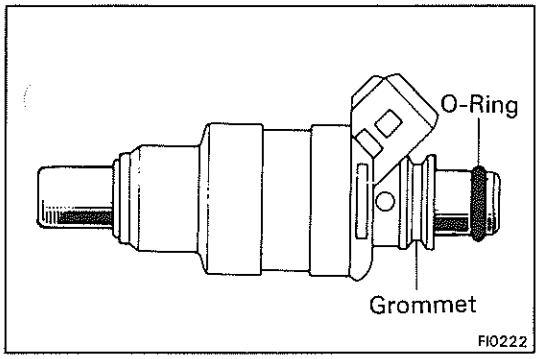
SST 09842-30020

Fuel drop: Less than one fuel drop of fuel per minute

(b) Disconnect the battery ground cable.

(c) Remove the SST and disconnect the service wire from the fuel pump service connector.

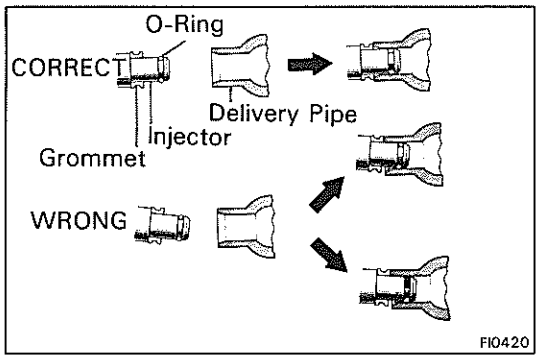
SST 09268-41045



INSTALLATION OF INJECTORS (1G-E)

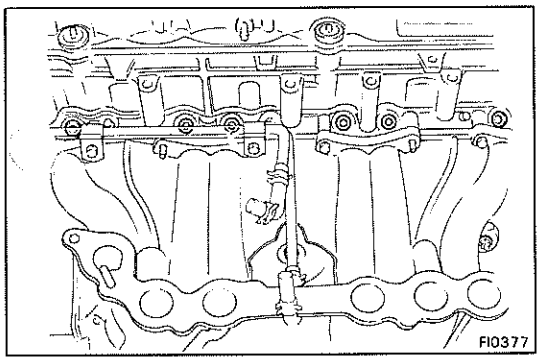
1. INSTALL INJECTORS INTO DELIVERY PIPE

(a) Replace the O-ring on to the injector.

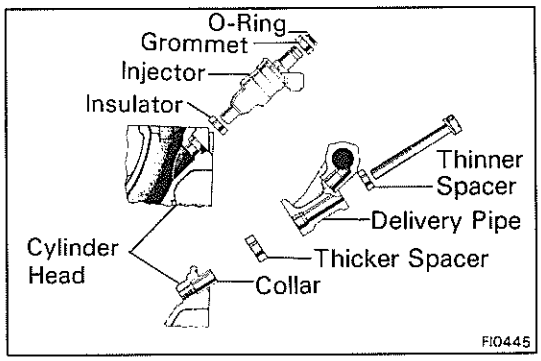


(b) Apply a thin coat of gasoline to the O-rings and install the injectors into the delivery pipe.

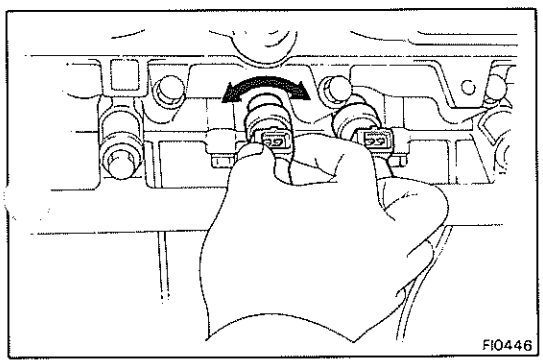
2. INSTALL DELIVERY PIPE WITH INJECTORS



(a) Install the six insulators, three thicker spacers and two collars to the cylinder head.



(b) Install the injectors together with the delivery pipe to the cylinder head.

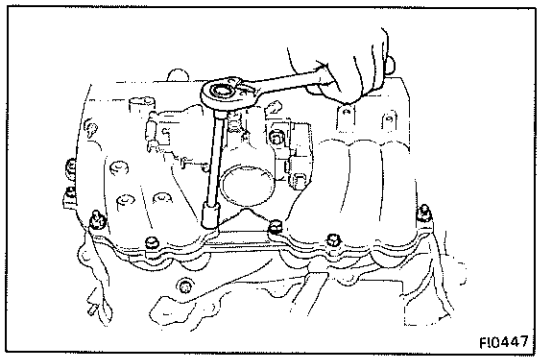


(c) Make sure that the injectors rotate smoothly.

(d) Install the three thinner spacers and bolts.

Torque the bolts.

Torque: 130 kg-cm (9.4 ft-lb, 13 N·m)



3. **INSTALL AIR INTAKE CHAMBER**

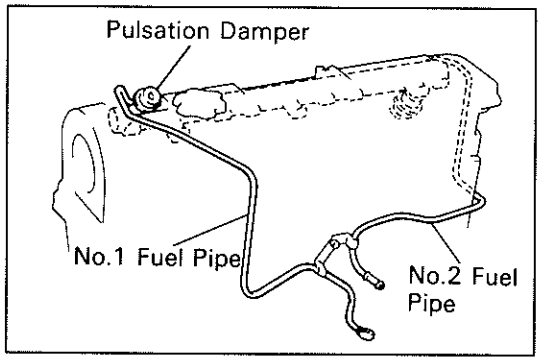
(a) Connect the two No. 2 water by-pass pipe hoses to the air valve.

(b) Install the air intake chamber and gasket with two nuts and five bolts.

Torque: 230 kg-cm (17 ft-lb, 23 N·m)

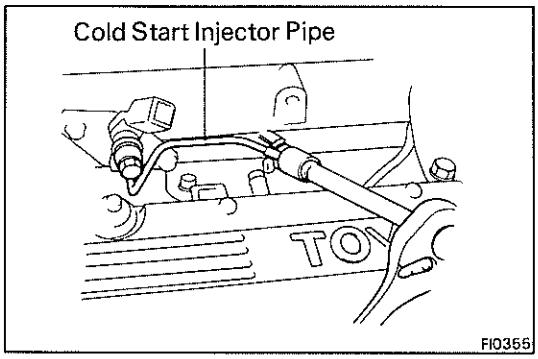
(c) Connect the cold start injection and throttle position sensor connectors.

(d) Install two air intake chamber stays.



4. **INSTALL NO. 1 AND NO. 2 FUEL PIPES WITH PULSATION DAMPER**

Torque: Pulsation damper
400 kg-cm (29 ft-lb, 39 N·m)

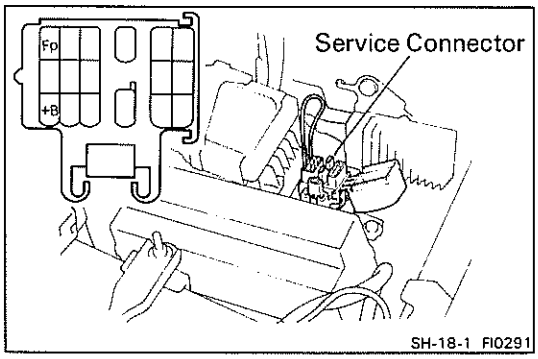


5. **INSTALL COLD START INJECTOR PIPE**

Install the cold start pipe with the gaskets and union bolts.

Torque: 180 kg-cm (13 ft-lb, 18 N·m)

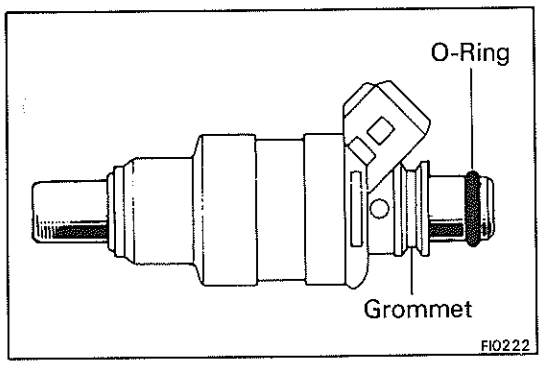
6. **INSTALL PCV HOSE AND VACUUM HOSES**



7. **CHECK FOR FUEL LEAKAGE**

(a) With the ignition switch ON, use a service wire to short both terminals of the fuel pump check connector.

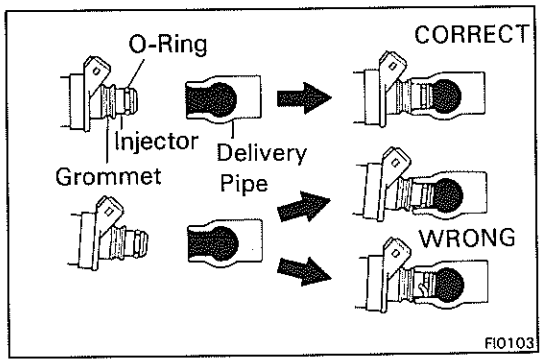
(b) Check for fuel leakage.



INSTALL OF INJECTORS (1G-GE)

1. INSTALL INJECTORS INTO DELIVERY PIPE

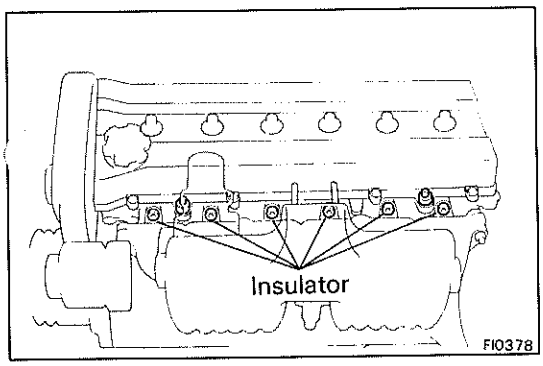
(a) Replace the O-ring on the injector.



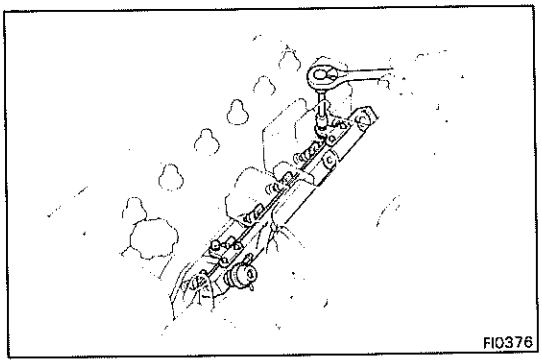
(b) Apply a thin coat of gasoline to the O-rings and install the injectors into the delivery pipe.

2. INSTALL DELIVERY PIPE WITH INJECTORS

(a) Install the six insulators and two spacers to the cylinder head.



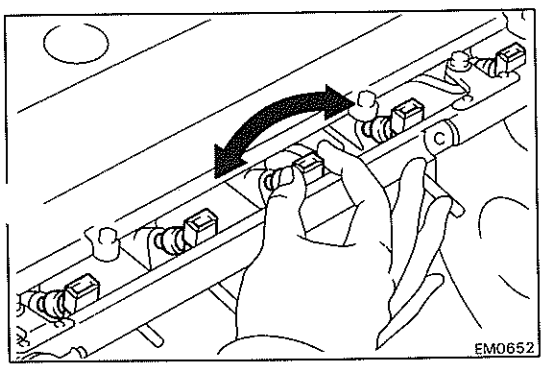
(b) Install the injectors together with the delivery pipe to the cylinder head.

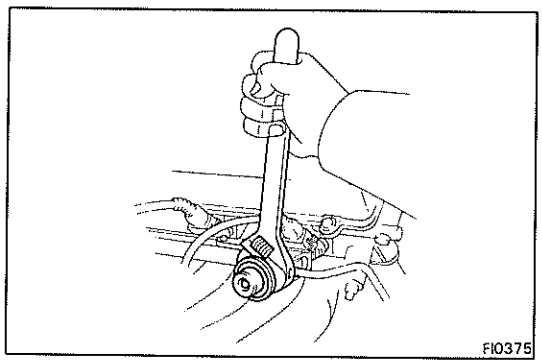


(c) Make sure that the injectors rotate smoothly.

(d) Install and torque the bolts.

Torque: 75 kg-cm (65 in-lb, 7.4 N·m)





3. **CONNECT FUEL INLET PIPE**
   (a) Install the fuel pipe and clamps with the nuts.
   (b) Install and tighten the pulsation damper and union bolt with new gaskets.

   Torque:

Pulsation damper	**300 kg-cm (22 ft-lb, 29 N·m)**
Union bolt	**170 kg-cm (12 ft-lb, 17 N·m)**

   (c) Tighten the nuts.

4. **CONNECT INJECTOR CONNECTORS**

5. **INSTALL COLD START INJECTOR PIPE (See page FI-96)**

6. **INSTALL COLD START INJECTOR AND THROTTLE BODY**

7. **CONNECT FOLLOWING HOSES**
   (a) Fuel return hose to the pressure regulator.
   (b) Vacuum sensing hose to the pressure regulator.
   (c) PCV hose to the cylinder head cover.

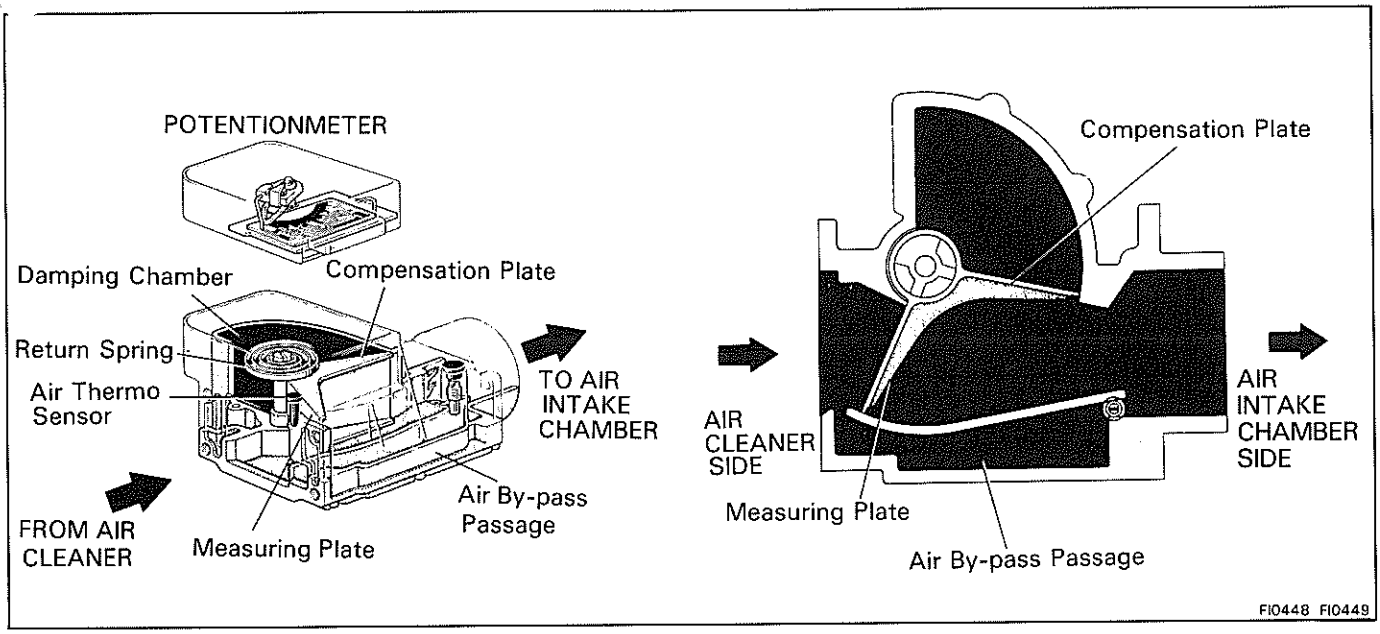
8. **FILL WITH COOLANT**

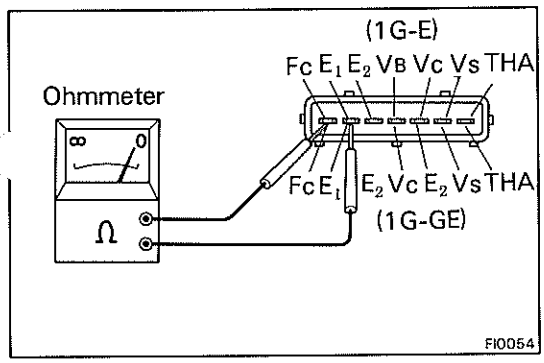
9. **CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY**

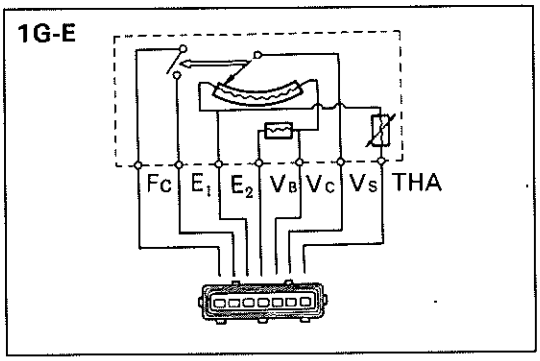
10. **CHECK FOR LEAKAGE (See page FI-9)**

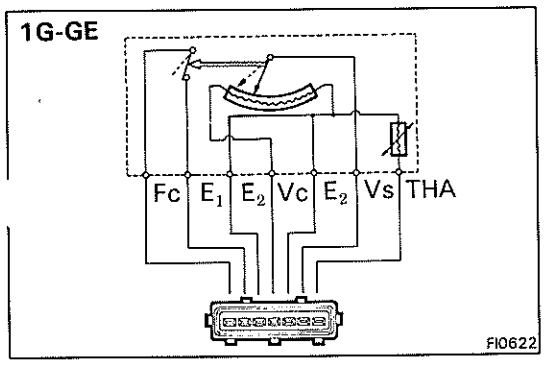
AIR INDUCTION SYSTEM

Air Flow Meter









ON-VEHICLE INSPECTION

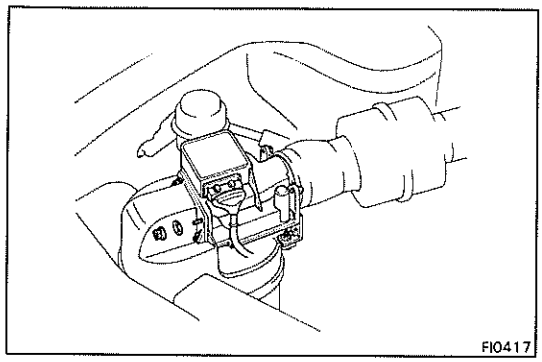
MEASURE RESISTANCE OF AIR FLOW METER

(a) Unplug the wiring connector from the air flow meter.

(b) Using an ohmmeter, measure the resistance between each terminal.

Terminals	Resistance		Temperature
	1G-E	1G-GE	
Vs – E_2	20 – 100 Ω	20 – 600 Ω	–
Vc – E_2	100 – 300 Ω	200 – 400 Ω	–
V_B – E_2	200 – 400 Ω	–	–
THA – E_2	10 – 20 KΩ 4 – 7 KΩ 2 – 3 KΩ 0.9 – 1.3 KΩ 0.4 – 0.7 KΩ		–20°C (4°F) 0°C (32°F) 20°C (68°F) 40°C (104°F) 60°C (140°F)
Fc – E_1	Infinity		–

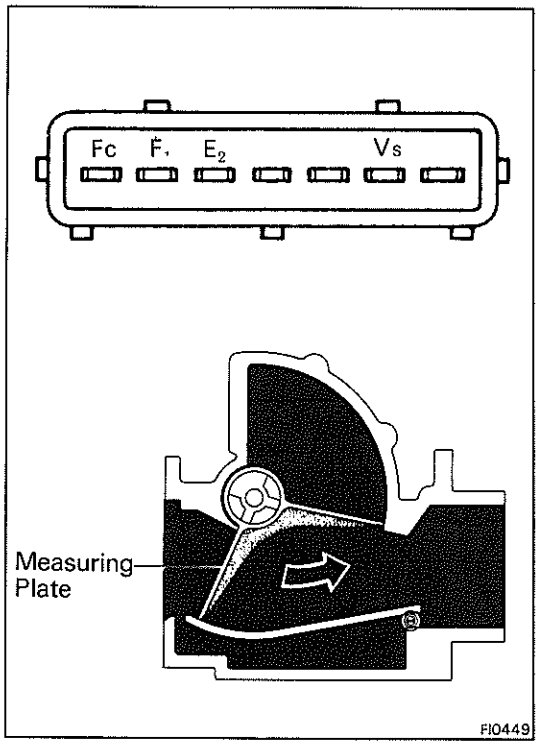
If not within specification, replace the air flow meter.



REMOVAL OF AIR FLOW METER

1. **DISCONNECT AIR FLOW METER CONNECTOR**
2. **DISCONNECT AIR CONNECTOR HOSE**
3. **REMOVE AIR FLOW METER**

Remove the four nuts and one bolt, and remove the air flow meter.



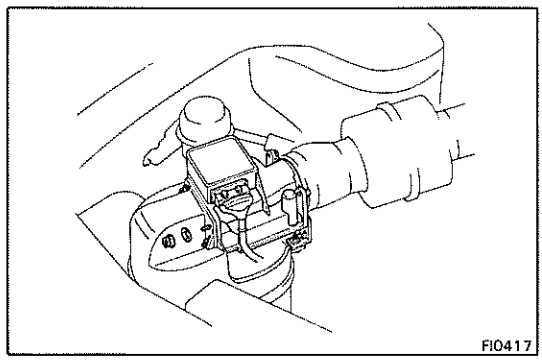
INSPECTION OF AIR FLOW METER

MEASURE RESISTANCE OF AIR FLOW METER

Using an ohmmeter, measure the resistance between each terminal by moving the measuring plate.

Terminals	Resistance Ω		Measuring plate opening
	1G-E	1G-GE	
Fc – E_1	Infinity		Fully closed
	Zero		Other than closed position
Vs – E_2	20 – 100	20 – 600	Fully closed
	20 – 1,000	20 – 1,200	Fully colsed to fully open position

NOTE: Resistance between Vs and E_2 will change in accordance with the measuring plate opening.



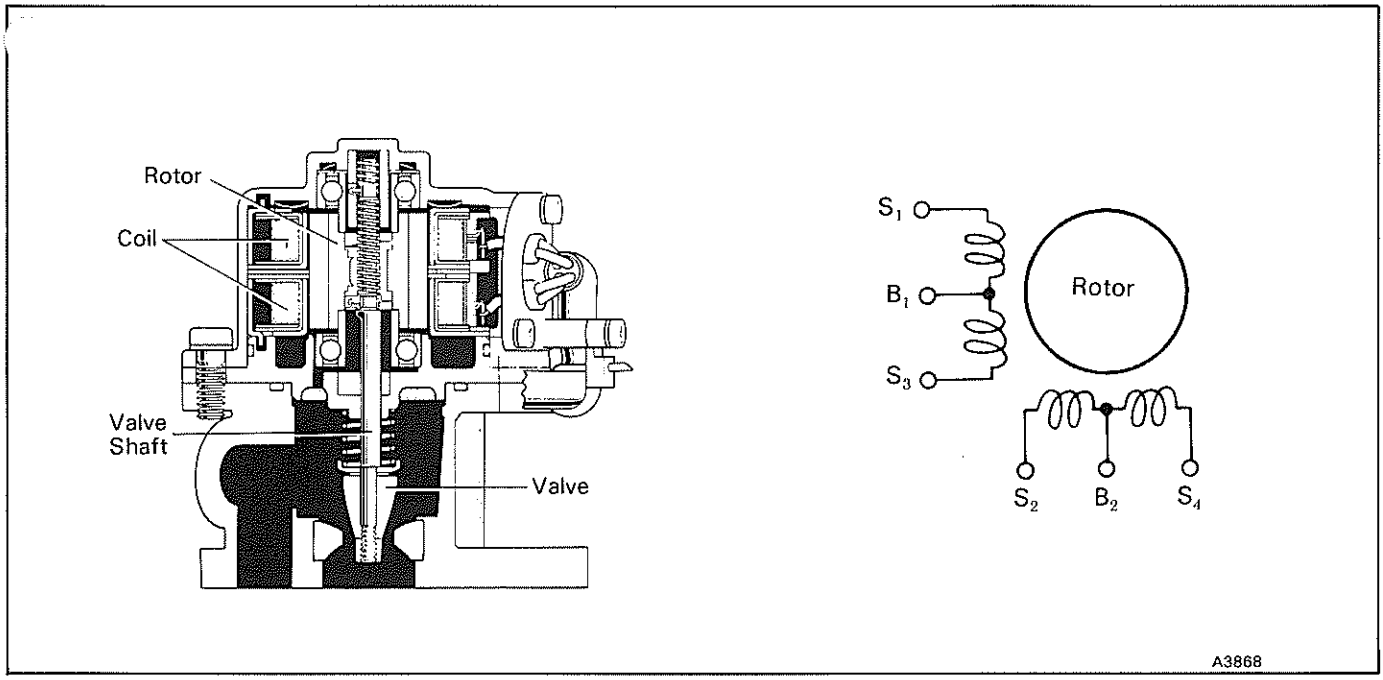
INSTALLATION OF AIR FLOW METER

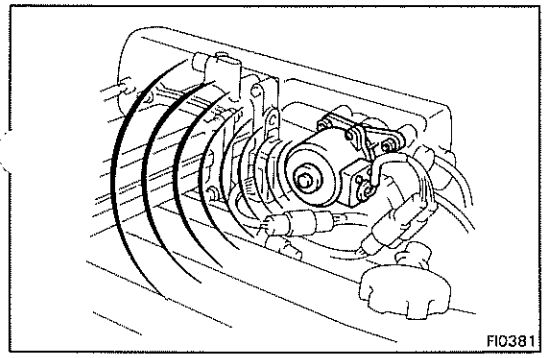
1. **INSTALL AIR FLOW METER**

Install the air flow meter with four nuts and one bolt.

2. **CONNECT AIR CONNECTOR HOSE**
3. **INSTALL AIR FLOW METER CONNECTOR**

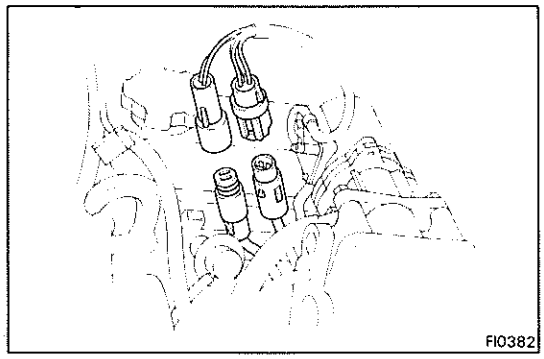
Idle Speed Control (ISC) Valve (1G-GE)





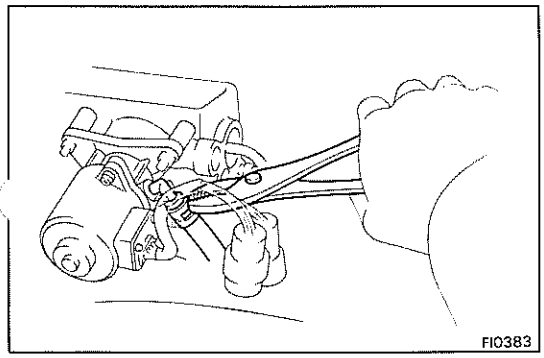
CHECK FOR OPERATING SOUND FROM ISC VALVE

Confirm that there is a clicking sound immediately after stopping the engine.

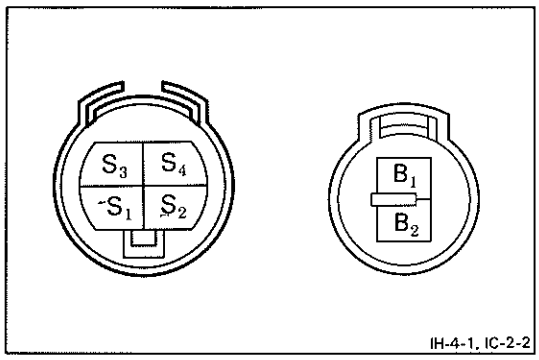


REMOVAL OF ISC VALVE

1. **DRAIN COOLANT**
2. **DISCONNECT TWO ISC VALVE CONNECTORS**



3. **DISCONNECT TWO WATER BY-PASS HOSES FROM ISC VALVE**
4. **REMOVE ISC VALVE**
   (a) Remove the two nuts and bolt.
   (b) Remove the ISC valve and gasket.

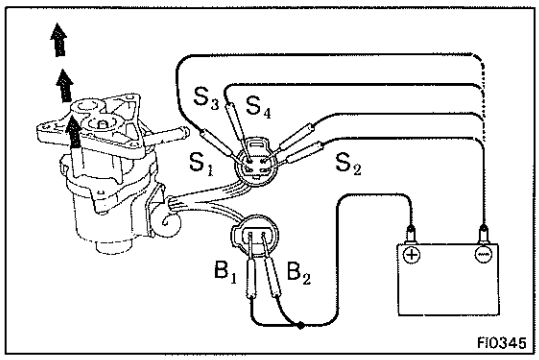


INSPECTION OF ISC VALVE

1. CHECK RESISTANCE OF ISC VALVE

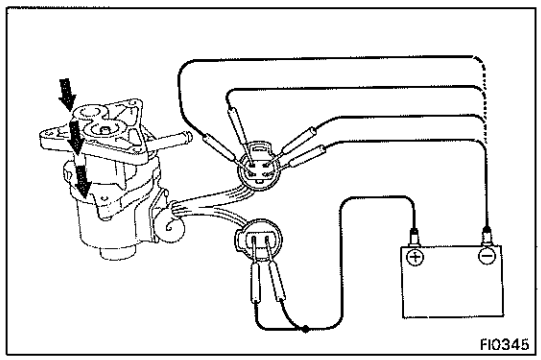
Using an ohmmeter, measure the resistance between terminal B_1–S_1 or and B_2–S_2 or S_4.

Resistance: **B_1–S_1 or S_3 10 – 30 Ω**
B_2–S_2 or S_4 10 – 30 Ω



2. INSPECT OPERATION OF ISC VALVE

(a) Apply battery voltage to terminals B_1 and B_2 and while repeatedly grounding S_1–S_2–S_3–S_4–S_1 in sequence, check that the valve moves toward the closed position.



(b) Apply battery voltage to terminals B_1 and B_2 and while repeatedly grounding S_4–S_3–S_2–S_1–S_4 in sequence, check that the valve moves toward the open position.

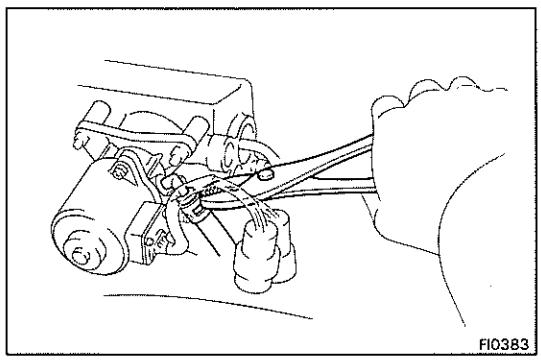
INSTALLATION OF ISC VALVE

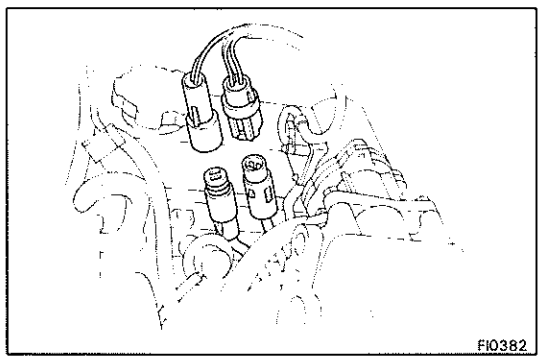
1. INSTALL ISC VALVE

(a) Install the new gasket to the intake manitold.

(b) Install the ISC valve with two bolts and one nut.

Torque: **65 kg-cm (56 in.-lb, 6.4 N·m)**

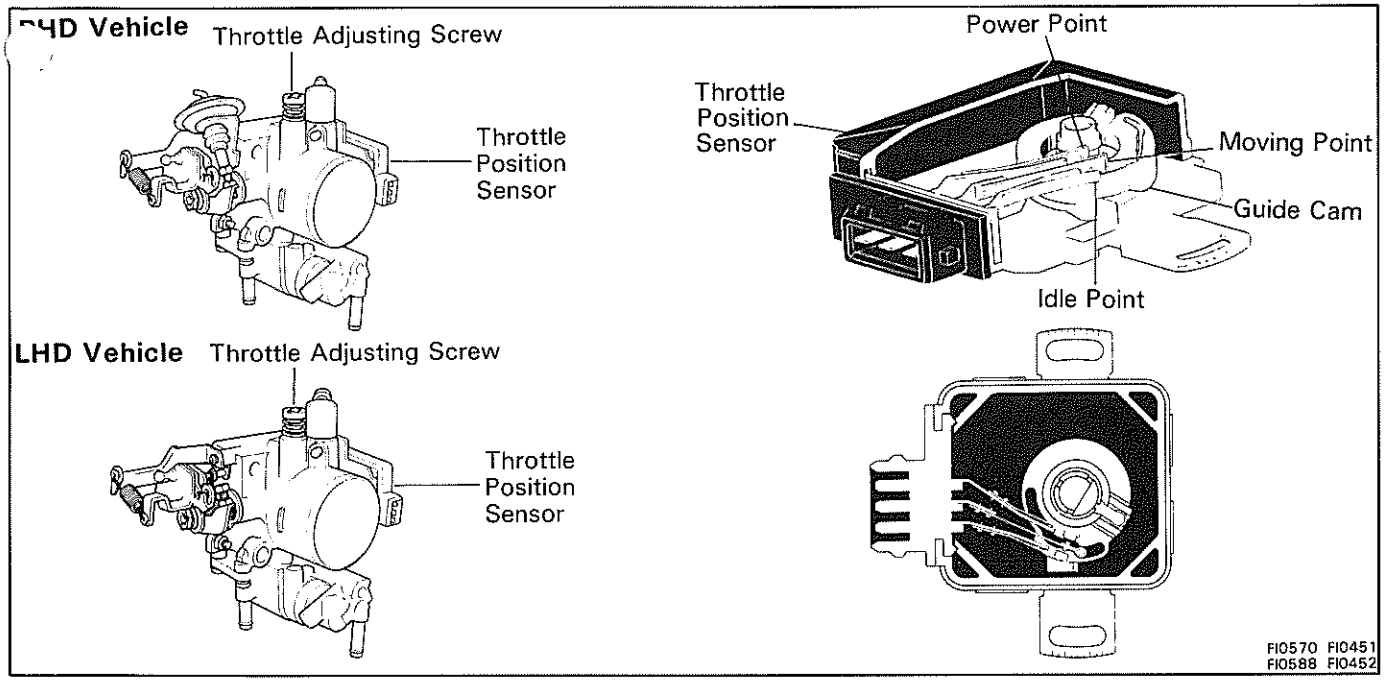


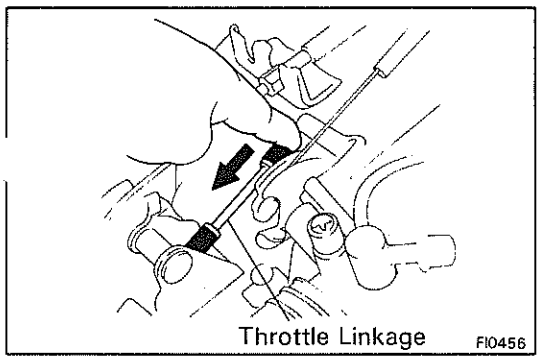


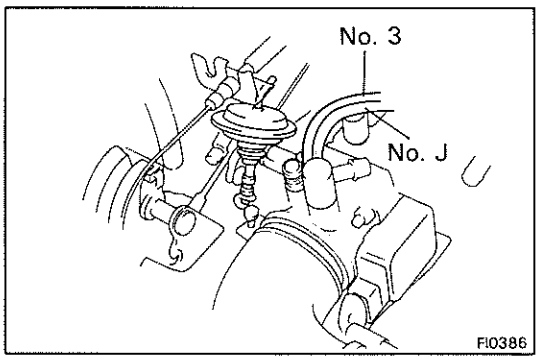
2. CONNECT TWO ISC VALVE CONNECTORS

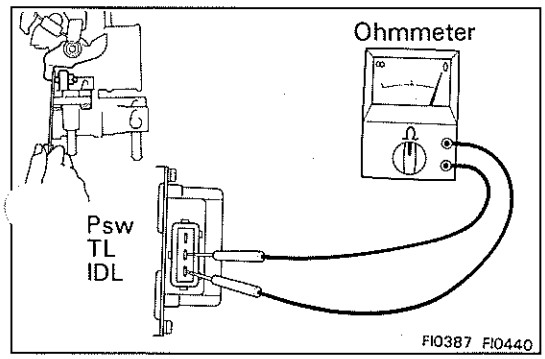
3. FILL WITH COOLANT

Throttle Body (1G-E)









ON-VEHICLE INSPECTION

1. CHECK THROTTLE BODY

(a) Check that the throttle linkage moves smoothly.

(b) Check the vacuum at each port.

- Start the engine.
- Check the vacuum with your finger.

Port No.	At idling	Other than idling
3	Vacuum	No vacuum
J *	No vacuum	Vacuum

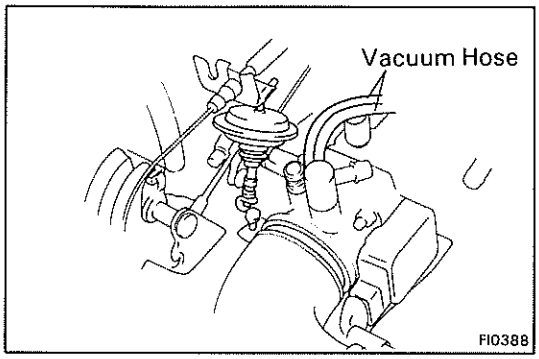
* RHD Vechicles only

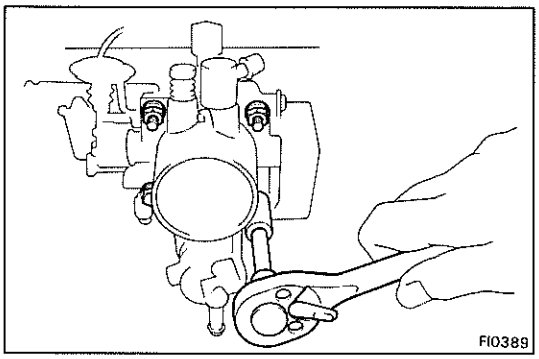
2. CHECK THROTTLE POSITION SENSOR

(a) Check the continuity between the terminals.

- Unplug the connector from the sensor.
- Insert a thickness gauge between the throttle stop screw and stop lever.
- Using an ohmmeter, check the continuity between each terminal.

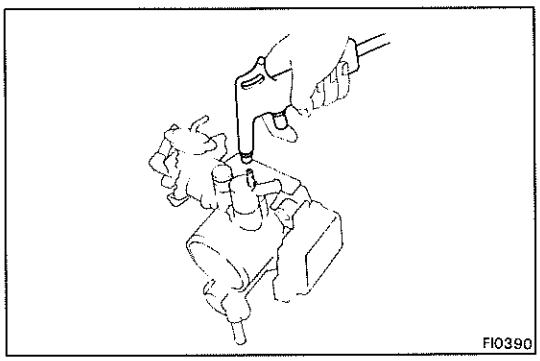
Clearance between lever and stop screw	Continuity of terminal		
	IDL – TL	Psw – TL	IDL – Psw
0.44 mm (0.0173 in.)	Continuity	No continuity	No continuity
0.66 mm (0.0260 in.)	No continuity	No continuity	No continuity
Throttle valve fully opened position	No continuity	Continuity	No continuity





REMOVAL OF THROTTLE BODY

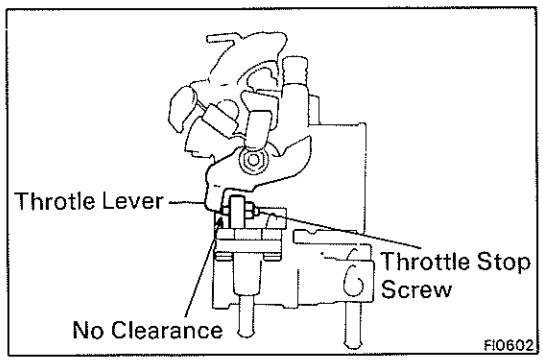
1. **DRAIN COOLANT**
2. **REMOVE AIR CONNECTOR HOSE**
3. **DISCONNECT FOLLOWING HOSES:**
   (a) Air hose
   (b) Vacuum hose(s)
   (c) No. 1 and No. 2 water by-pass pipe hoses.
4. **DISCONNECT THROTTLE SENSOR CONNECTOR**
5. **DISCONNECT ACCELERATOR CABLE FROM THROTTLE BODY**
6. **DISCONNECT THROTTLE CABLE FOR AUTOMATIC TRANSMISSION**
7. **REMOVE THROTTLE BODY**
   Remove the two bolts, nuts and the throttle body and gasket.



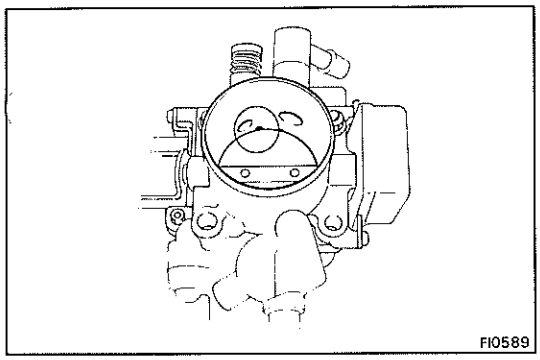
INSPECTION OF THROTTLE BODY

1. **CLEAN THROTTLE BODY BEFORE INSPECTION**
   (a) Wash and clean the cast parts with a soft brush and craburetor cleaner.
   (b) Using compressed air, blow through all passages and apertures in the throttle body.

   CAUTION: To prevent deterioration, do not clean the throttle position sensor.



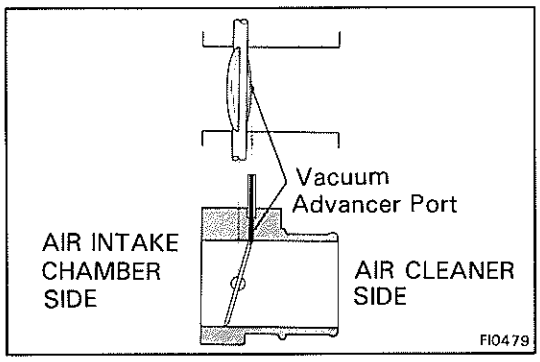
2. **CHECK THROTTLE VALVE**
   (a) Check that there is no clearance between the throttle stop screw and throttle lever when the throttle valve is fully closed.


FI0589

(b) When the throttle valve is fully closed, check that advancer port is located on the air cleaner side as shown in the figure.

If not, adjust the throttle valve closing angle.

NOTE: Do not adjust the throttle valve closing angle unless necessary.



FI0479

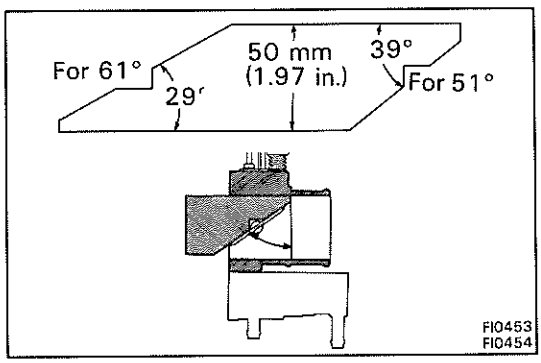
3. IF NECESSARY, ADJUST THROTTLE STOP SCREW

(a) After loosening the lock nut of throttle stop screw, loosen the stop screw until is about to touch the lever.

NOTE: Make sure that the throttle valve is fully closed and the vacuum advancer port is positioned at the air cleancer side.

(b) Have the throttle stopper screw touch the lever. Then screw it in 1/4 turn and lock it with the lock nut.

(c) After installation of the throttle body, make sure that engine rpm does not change even if the vacuum hose (Part No. J) to the vacuum advance port is pinched.

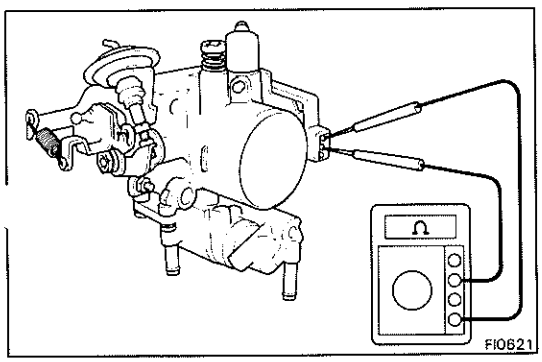


FI0453
FI0454

4. CHECK THROTTLE POSITION SENSOR

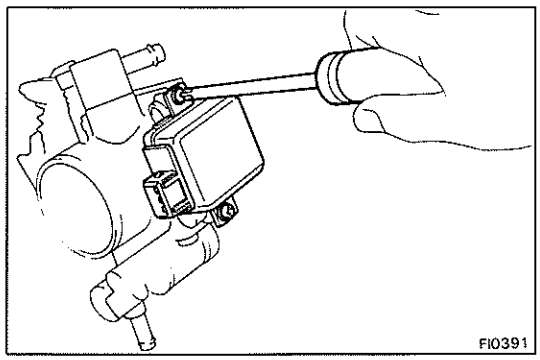
(a) Make an angle gauge as shown in the figure.

(b) Set the throttle valve angle to 51° or 61° from a vertical plane.


FI0621

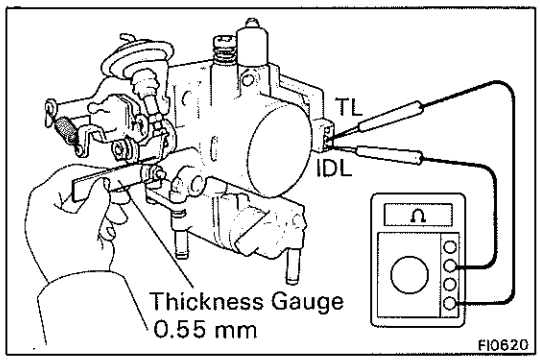
(c) Using an ohmmeter, check the continuity between each terminal.

Throttle valve opening angle	Continuity		
	IDL – TL	Psw – TL	IDL – Psw
Less than 7.5° from vertical	Continuity	No continuity	No continuity
51° from vertical	No continuity	No continuity	No continuity
61° from vertical	No continuity	Continuity	No continuity



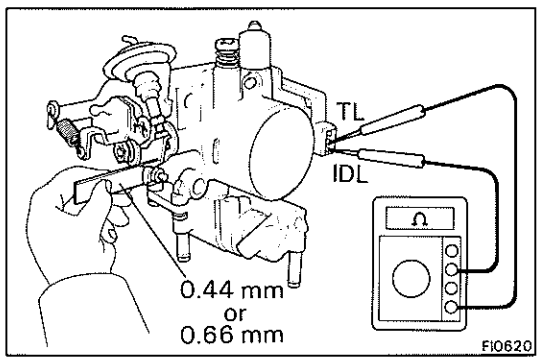
5. **IF NECESSARY ADJUST THROTTLE POSITION SENSOR**

(a) Loosen the two screws of the sensor.



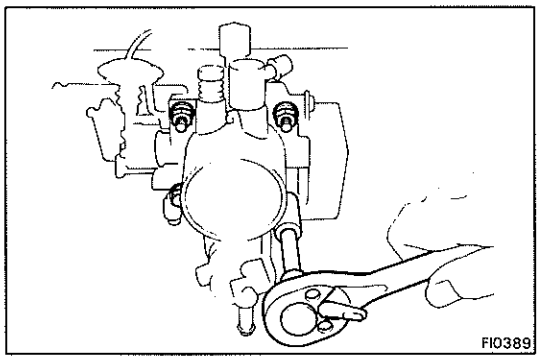
(b) Insert a thickness gauge (0.55 mm or 0.0216 in.) between the throttle stop screw and lever, and connect the ohmmeter to terminals IDL and TL.

Gradually turn the sensor counterclockwise until the ohmmeter deflects, and secure the sensor with two screws.



(c) Using a thickness gauge, recheck the continuity between terminals IDL and TL.

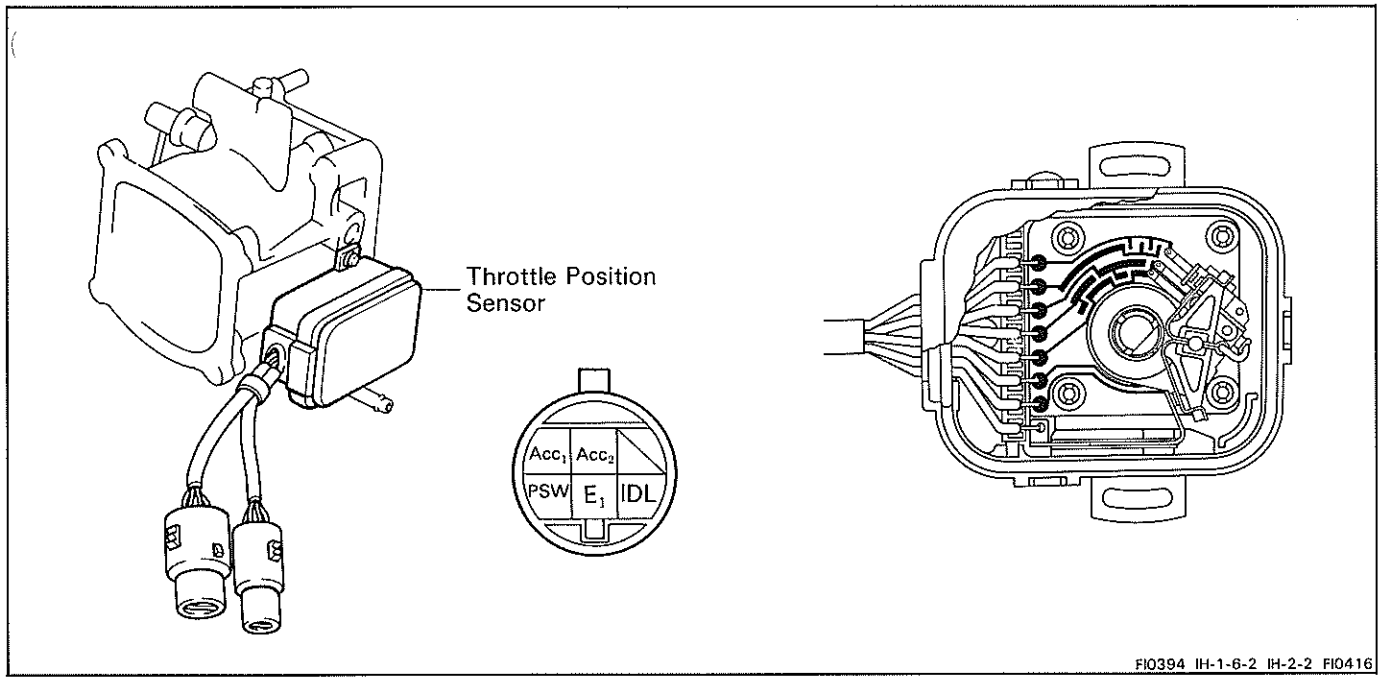
Clearance between lever and stop screw	Continuity (IDL – TL)
0.44 mm (0.0173 in.)	Continuity
0.66 mm (0.0260 in.)	No continuity

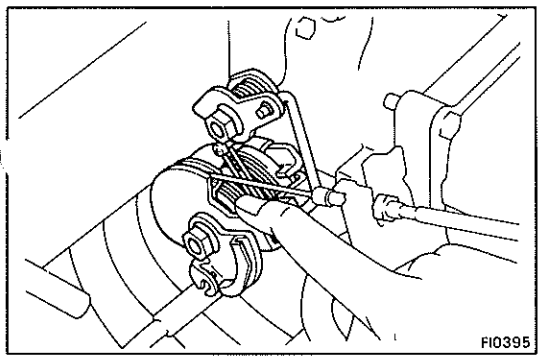


INSTALLATION OF THROTTLE BODY

1. **INSTALL THROTTLE BODY**
2. **CONNECT THROTTLE CABLE (For A/T)**
3. **CONNECT ACCELERATOR CABLE**
4. **CONNECT THROTTLE SENSOR CONNECTOR**
5. **CONNECT FOLLOWING HOSES:**
   (a) No. 2 water by-pass pipe hoses
   (b) Vacuum control hoses
   (c) Air valve pipe hose
6. **INSTALL AIR CONNECTOR HOSE**
7. **FILL WITH COOLANT**

Throttle Body (1G-GE)

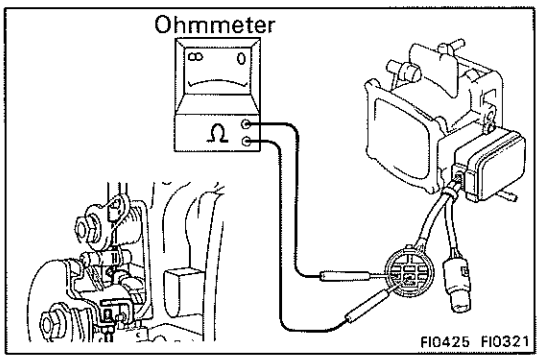




ON-VEHICLE CHECK

1. CHECK THROTTLE BODY

Check that the throttle linkage moves smoothly.

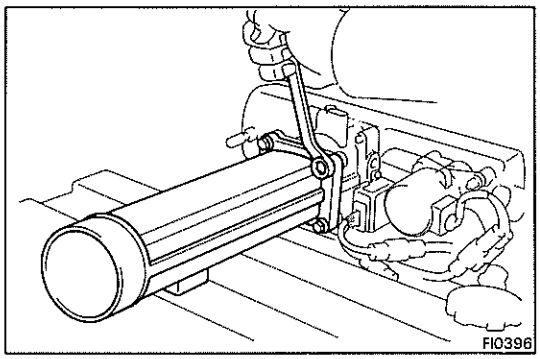


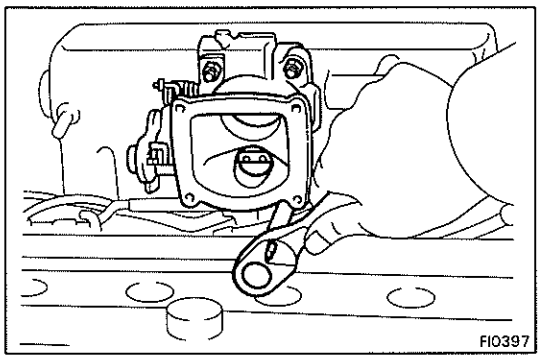
2. CHECK THROTTLE POSITION SENSOR

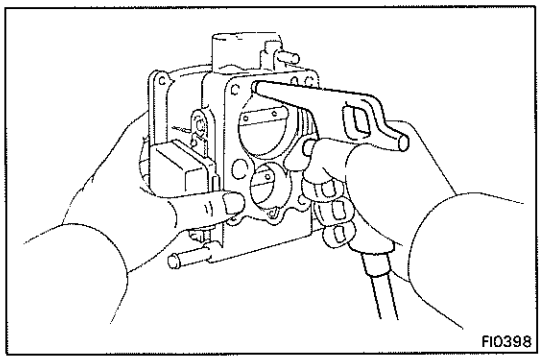
(a) Check the continuity between the terminals.

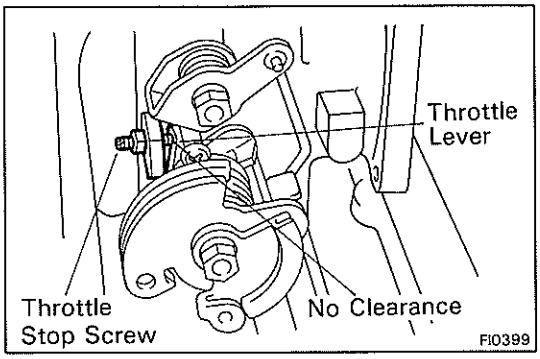
- Unplug the connector from the sensor.
- Insert a wire gauge between the throttle stop screw and stop lever.
- Using an ohmmeter, check the continuity between each terminal.

Clearance between lever and stop screw	Continuity of terminal			
	IDL – E_1	Psw – E_1	IDL – Psw	Acc_1, Acc_2, – F
0.30 mm (0.0118 in.) 0.50 mm (0.0197 in.)	Continuity No continuity	No continuity No continuity	No continuity No continuity	—
Throttle valve fully opened position	No continuity	Continuity	No continuity	—
Throttle valve fully closed to fully open	—	—	—	Continuity three times









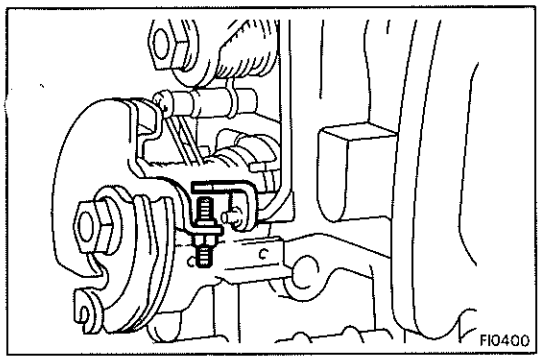
REMOVAL OF THROTTLE BODY

1. **REMOVE AIR INTAKE CONNECOTR**
   (a) Remove the four bolts and air intake connector.
   (b) Remove the O-ring from the throttle body.
2. **DRAIN COOLANT**
3. **DISCONNECT FOLLOWING HOSES:**
   (a) No. 1 and No. 3 water by-pass hoses
   (b) PCV hose
4. **REMOVE ACCELERATOR CONTROL CABLE BRACKET**
5. **DISCONNECT THROTTLE SENSOR CONNECTOR**
6. **REMOVE THROTTLE BODY**
   (a) Remove the two nuts and bolts.
   (b) Remove the throttle body and gasket.

INSPECT OF THROTTLE BODY

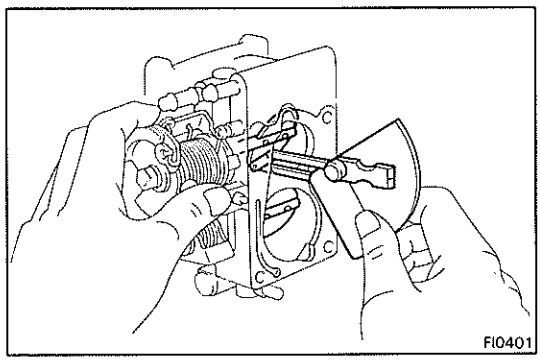
1. **CLEAN THROTTLE BODY BEFORE INSPECTION**
   (a) Wash and clean the cast parts with a soft brush in carburetor cleaner.
   (b) Using compressed air, blow through all passages and apertures in the throttle body.

   CAUTION: To prevent deterioration, do not clean the throttle position sensor.
2. **CHECK THROTTLE VALVE**
   (a) Check that there is no clearance between the throttle stop screw and throttle lever when the throttle valve is fully closed.



(b) With the first throttle valve fully closed, check the clearance between the secondary throttle valve stop screw and secondary lever.

Standard clearance: Less than 1 mm (0.0394 in.)

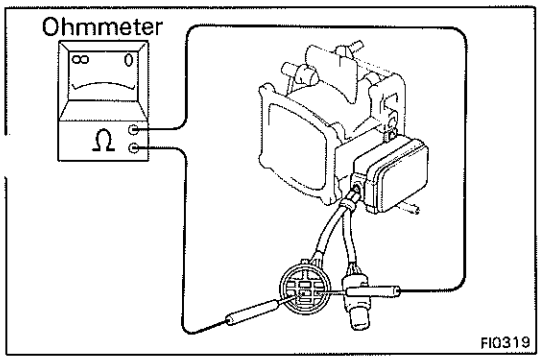


(c) Using SST, check the first throttle valve opening at the same time the second throttle valve just starts to open.

SST 09240-00014

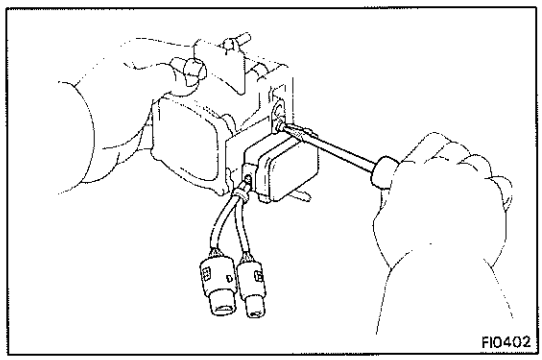
Standard angle: 18 – 26° from horizontal plane

NOTE: It is not necessary to adjust the secondary touch angle.



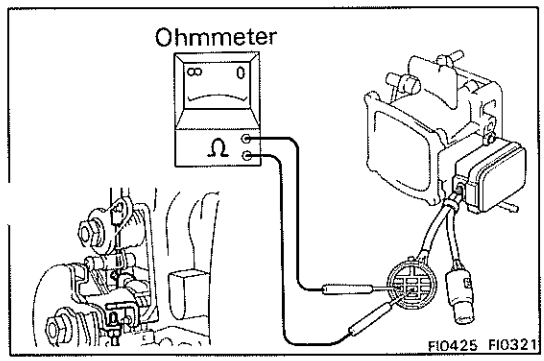
(d) Using an ohmmeter, check the continuity between each terminal.

Throttle valve angle	Continuity		
	IDL – E_1	Psw – E_1	IDL – Psw
Less than 16.3° from vertical	Continuity	No continuity	No continuity
70° from vertical	No continuity	No continuity	No continuity
80° from vertical	No continuity	Continuity	No continuity



3. IF NECESSARY ADJUST THROTTLE POSITION SENSOR

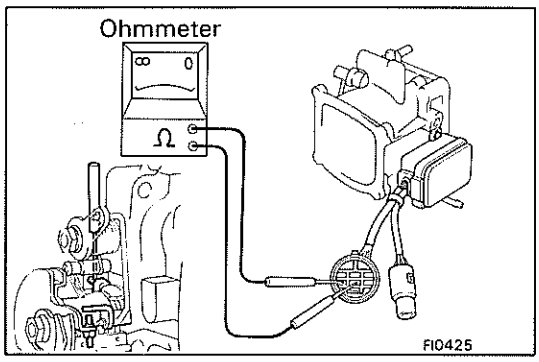
(a) Loosen the screws of the sensor.



(b) Insert SST 0.40 mm (0.0157 in.) between the throttle stop screw and lever, and connect the ohmmeter to terminals IDL and E_1.

Gradually turn the sensor counterclockwise until the ohmmeter deflects, and secure the sensor with two screws.

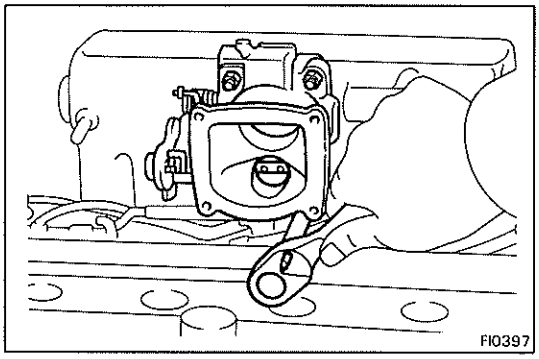
SST 09240-00020

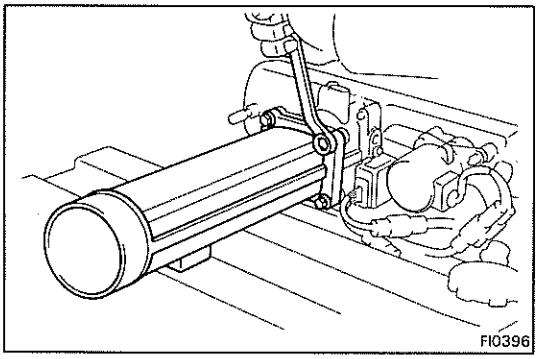


(c) Using SST, recheck the continuity between terminals IDL and E_1.

SST 09240-00020

Clearance between lever and stop screw	Continuity (IDL – E_1)
0.30 mm (0.012 in.)	Continuity
0.50 mm (0.020 in.)	No continuity





INSTALLATION OF THROTTLE BODY

1. INSTALL THROTTLE BODY

(a) Install a new gasket to the intake manifold.

(b) Install the throttle body with two bolts and nuts.

2. CONNECT THROTTLE SENSOR CONNECTOR

3. INSTALL ACCEL CONTROL CABLE BRACKET

4. CONNECT FOLLOWING HOSES:

(a) PCV hose

(b) No. 1 and No. 3 water by-pass hoses

5. INSTALL AIR INTAKE CONNECTOR

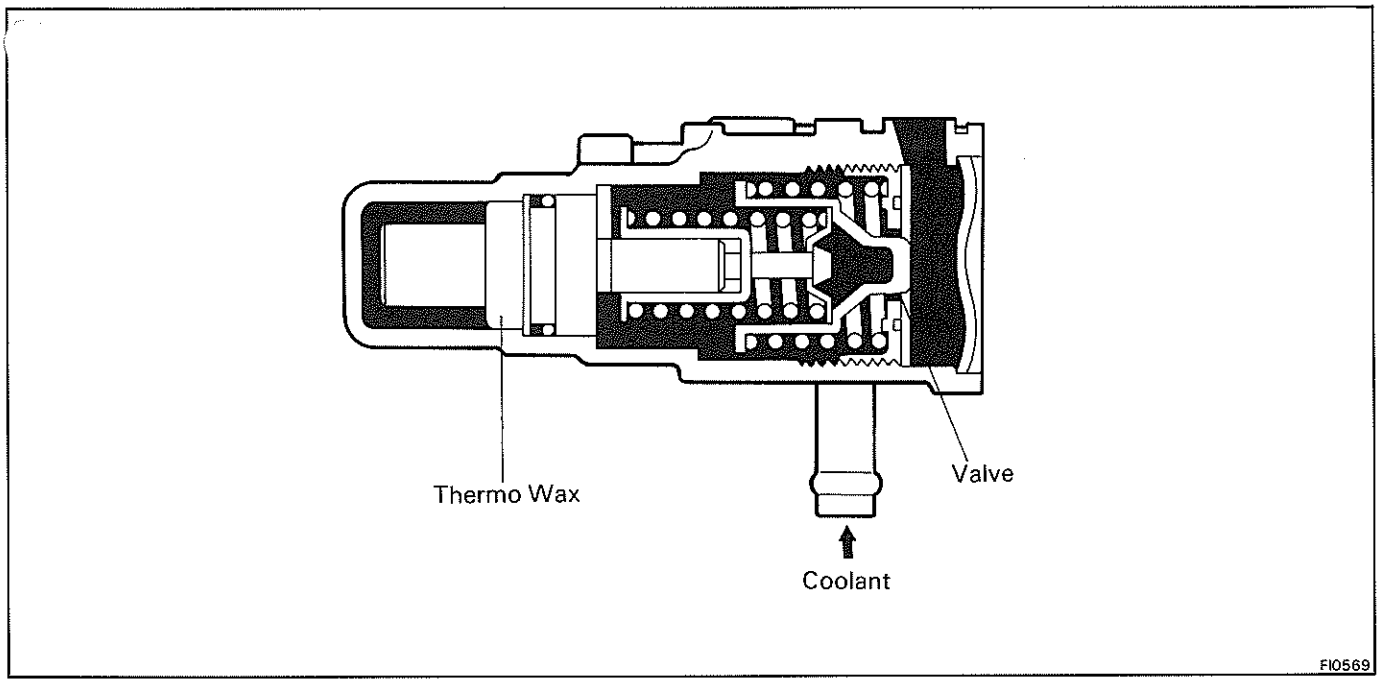
(a) Install the new O-ring to the throttle body.

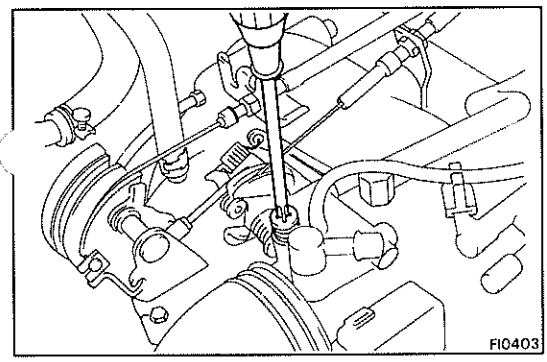
(b) Install the air intake connector with four bolts. Torque the bolts.

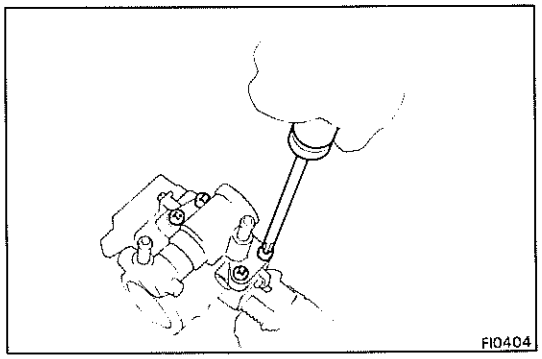
Torque: 65 kg-cm (56 in.-lb, 6.4 N·m)

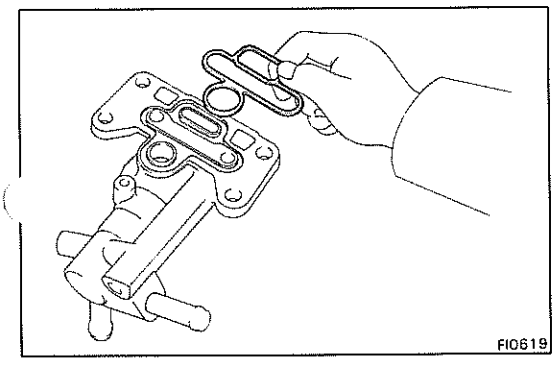
6. FILL WITH COOLANT

Air Valve (1G-E only)









ON-VEHICLE INSPECTION

CHECK OPERATION OF AIR VALVE

Check the engine rpm by fully screw in the idle speed adjusting screw.

At low temp. (Coolant temp.: below 80°C or 176°F)

- When the idle speed adjusting screw is in, the engine RPM should drop.

After warm-up

- When the idle speed adjusting screw is in, check that the engine RPM drops less than 600 rpm or the engine stops.

REMOVAL OF AIR VALVE

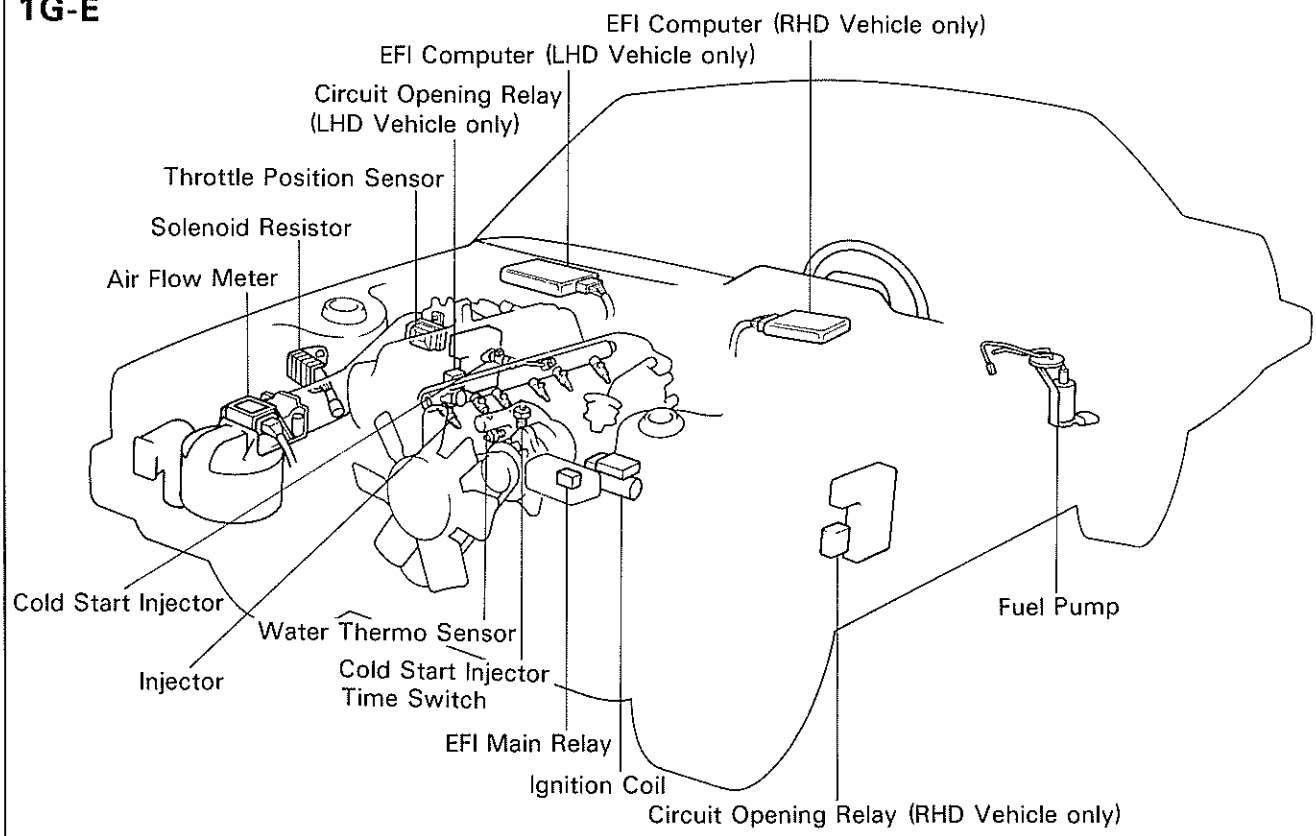
1. **REMOVE THROTTLE BODY (See page FI-110)**
2. **REMOVE AIR VALVE**
   (a) Remove the four screws, air valve and gasket.

INSTALLATION OF AIR VALVE

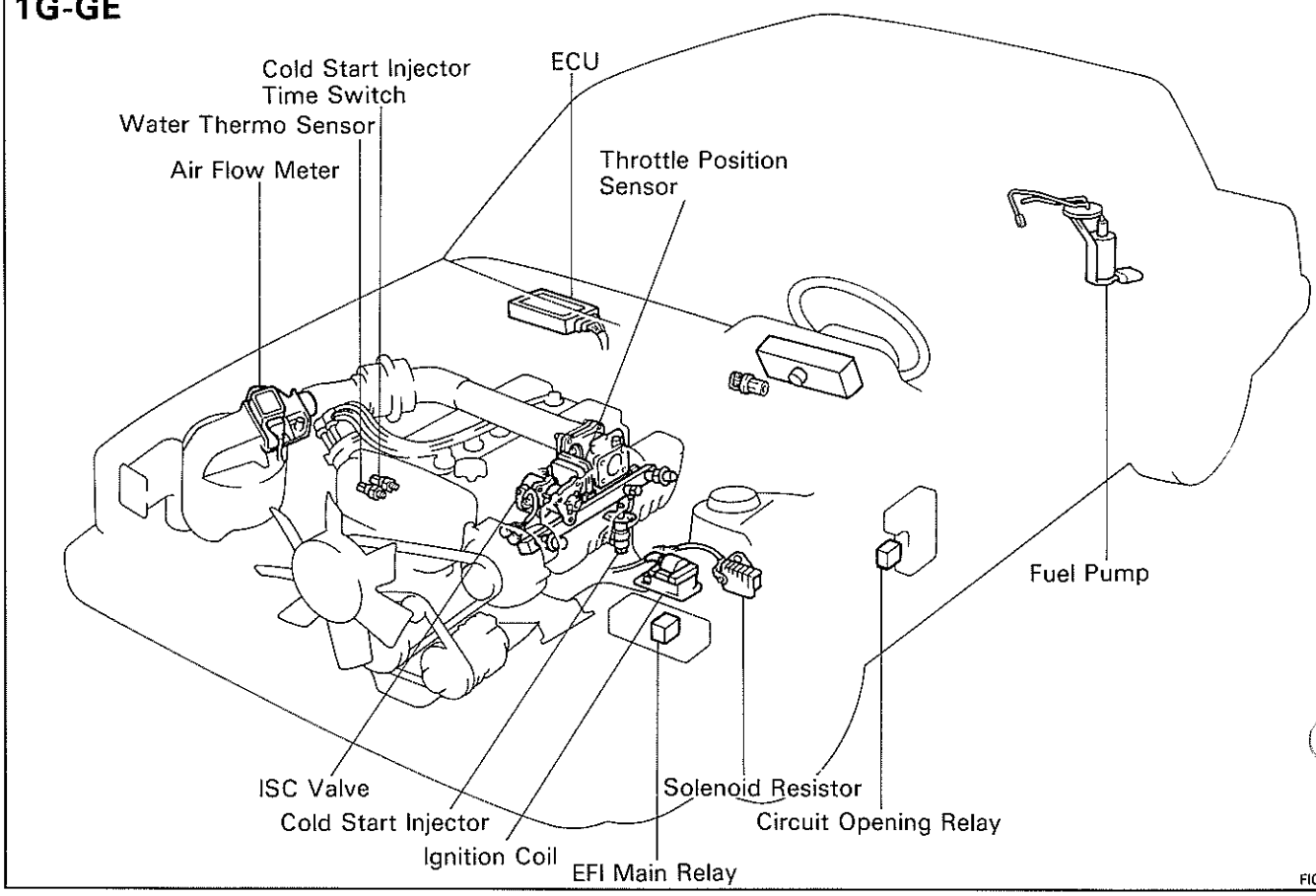
1. **INSTALL OF AIR VAVLE**
   (a) Place a new gasket on the air valve.
   (b) Install the air valve with the four screws.

ELECTRONIC CONTROL SYSTEM
Location of Electronic Control Parts

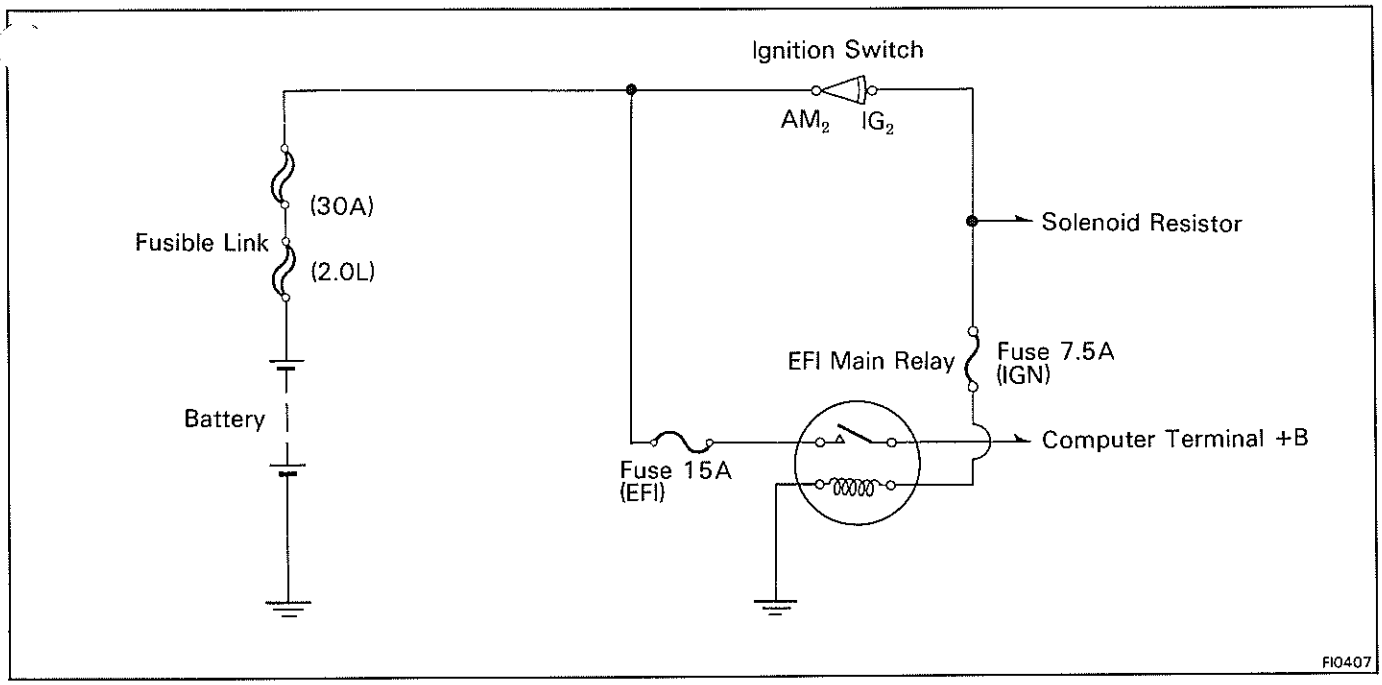
1G-E

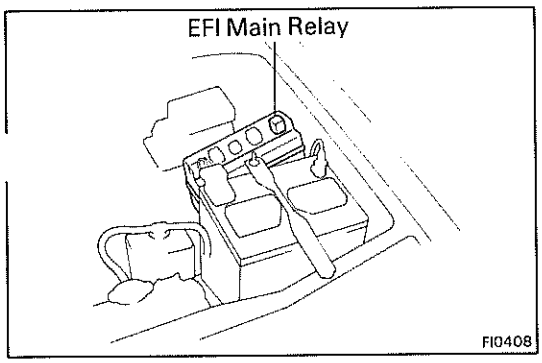


1G-GE



EFI Main Relay



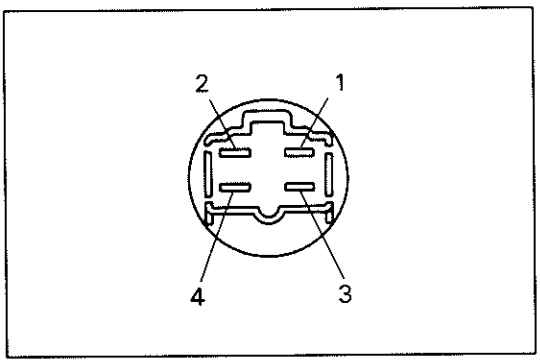


INSPECTION OF EFI MAIN RELAY

1. CHECK EFI MAIN RELAY OPERATION

(a) Turn the ignition switch ON.

(b) At this time an operation noise will occur from the relay.



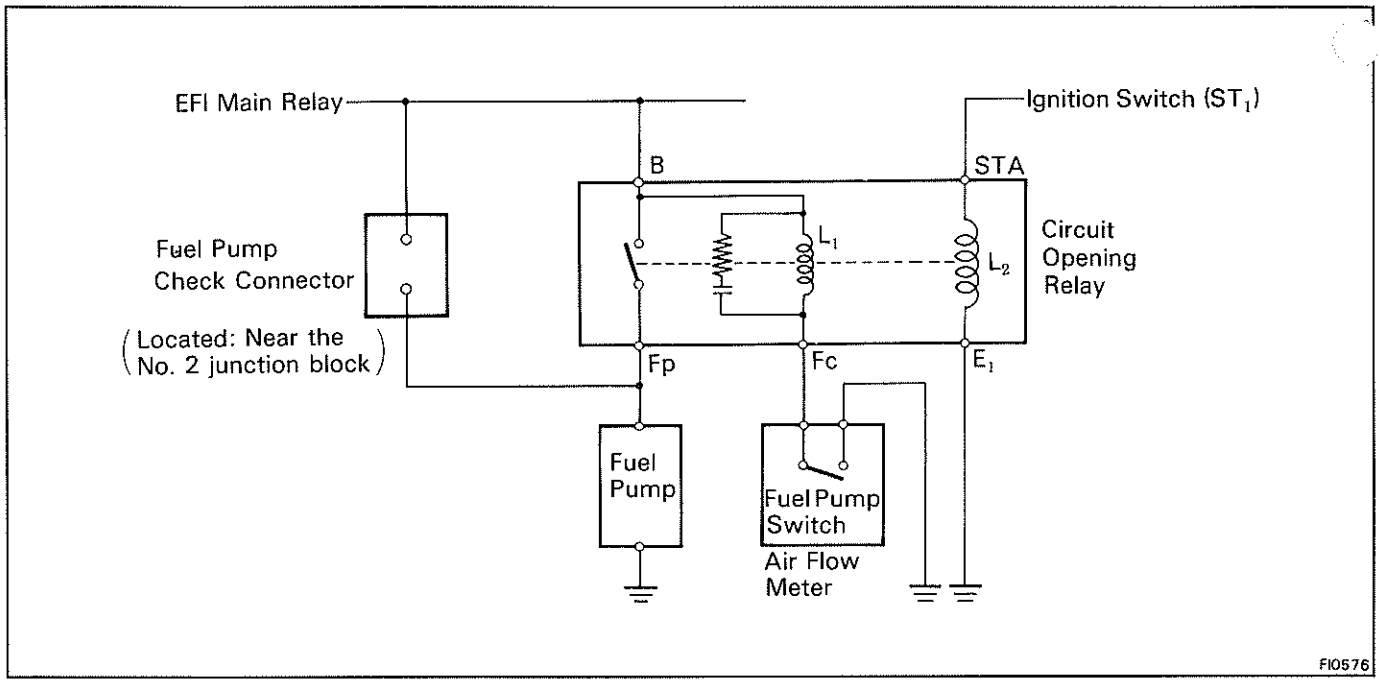
2. MEASURE RESISTANCE OF EFI MAIN RELAY

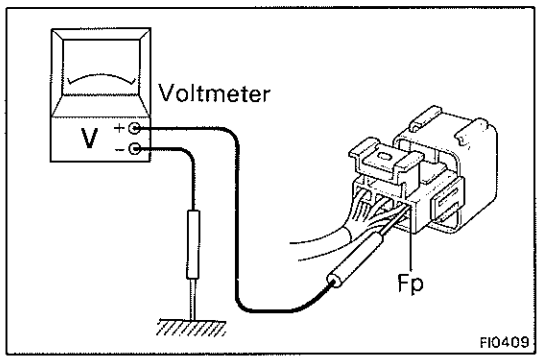
(a) Remove the EFI main relay from the relay block.

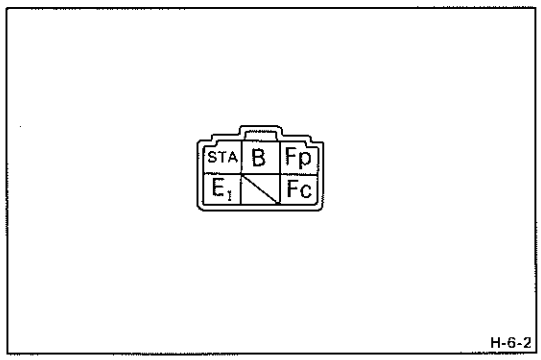
(b) Measure the resistance between each terminal.

Between terminals	Resistance (Ω)
1 – 3	40 – 60
2 – 4	Infinity

Circuit Opening Relay







INSPECTION OF CIRCUIT OPENING RELAY

1. CHECK CIRCUIT OPENING RELAY OPERATION

(a) Remove the cowl side trim (driver's side).

(b) Remove the circuit opening relay with the connec from No. 1 relay block.

(c) Using a voltmeter, check that the meter indicates voltage at Fp terminal during engine cranking and running.

(d) Stop the engine.

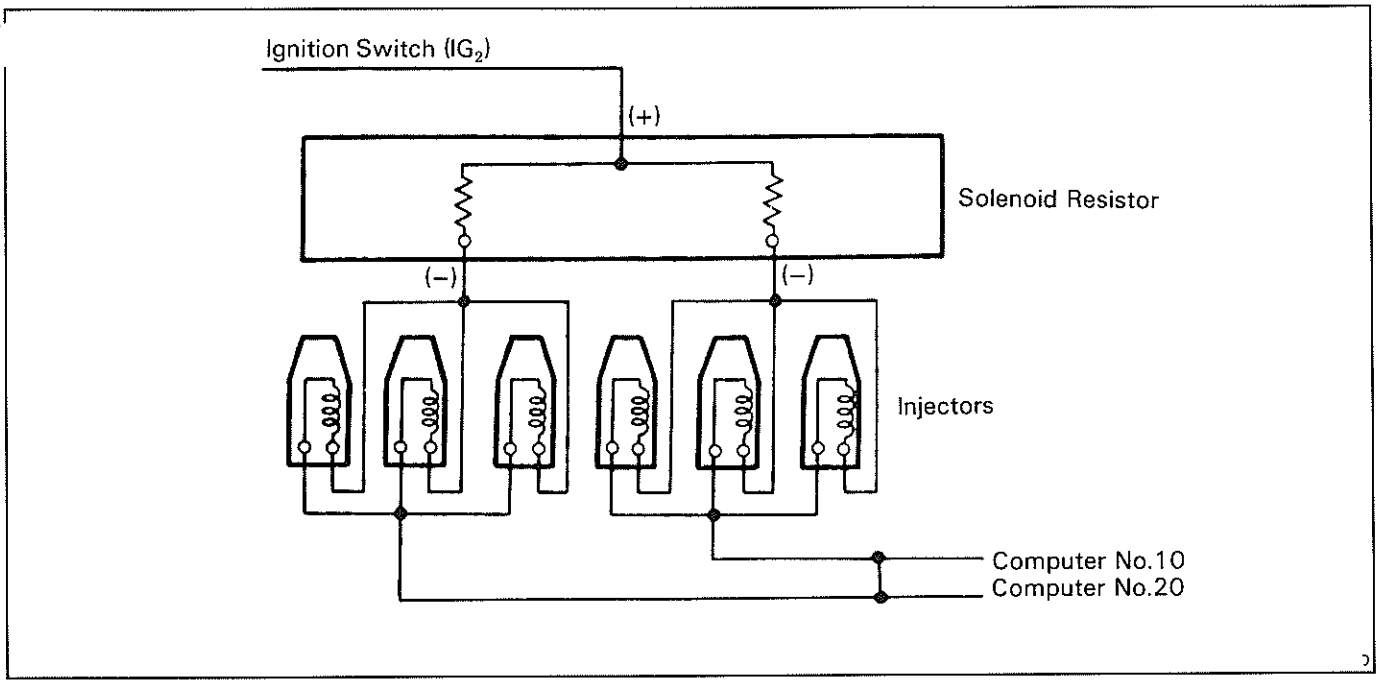
2. MEASURE RESISTANCE OF CIRCUIT OPENING RELAY

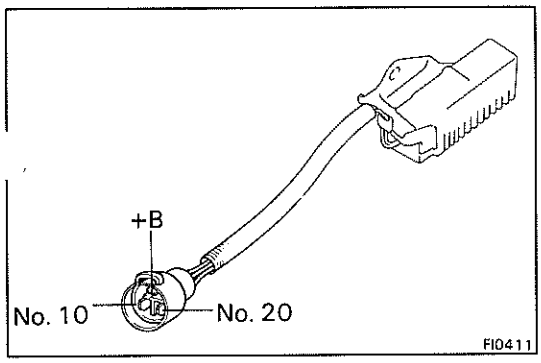
(a) Disconnect the connector.

(b) Measure the resistance between each terminal.

Terminals	Resistance (Ω)
STA – E_1	30 – 60
IG – Fc	80 – 120
B – Fp	Infinity

Solenoid Resistor





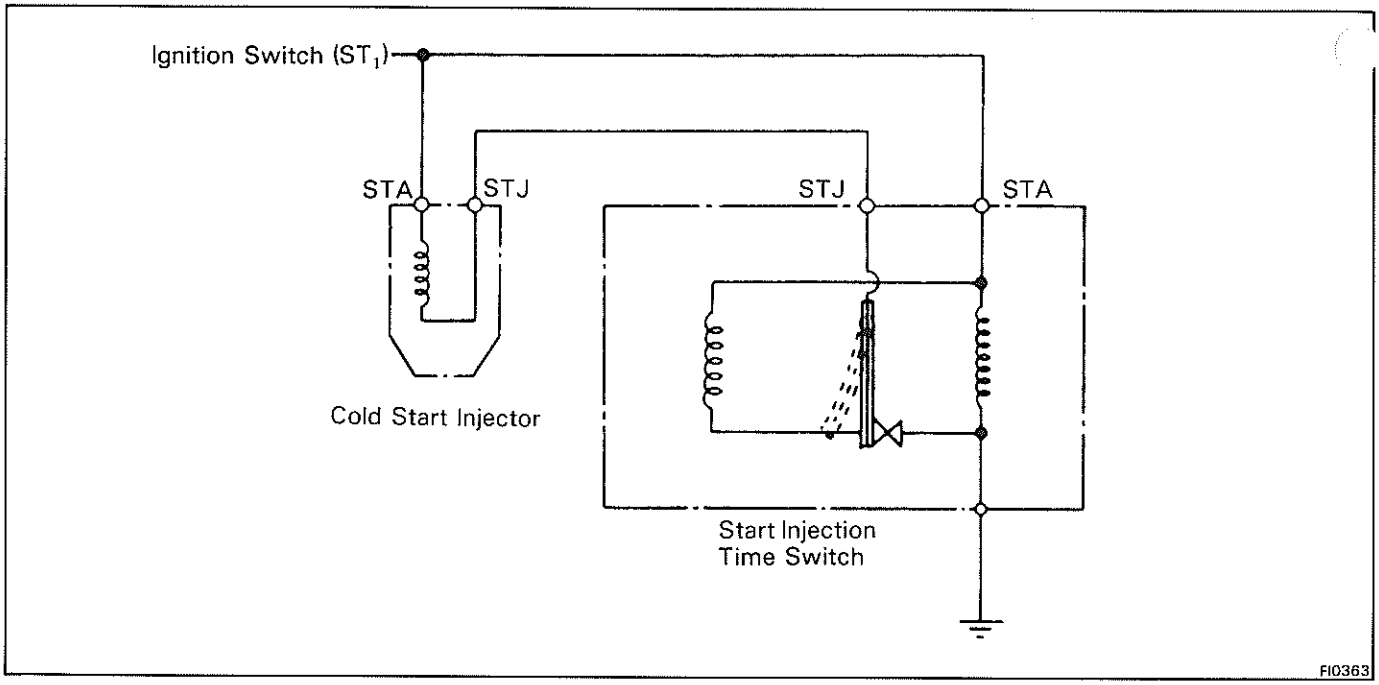
INSPECTION OF SOLENOID RESISTER

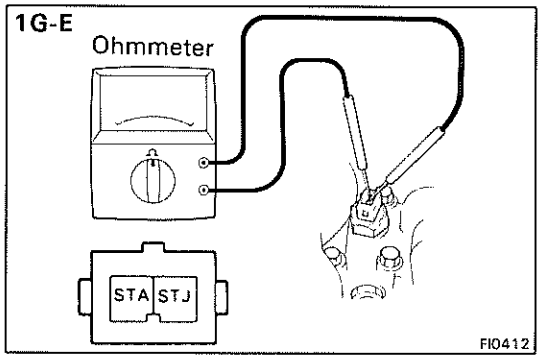
MEASURE RESISTANCE OF SOLENOID RESISTOR

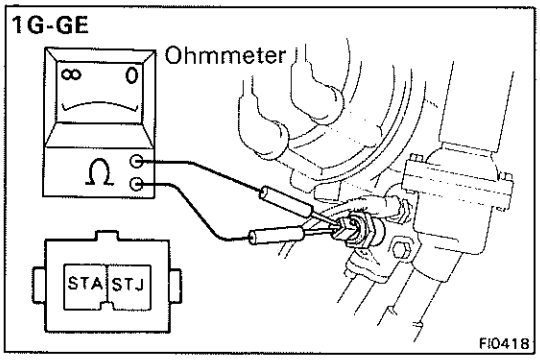
Using an ohmmeter, measure the resistance between +B and other terminals.

Resistance: 2Ω each

Start Injector Time Switch







INSPECTION OF START INJECTOR TIME SWITCH

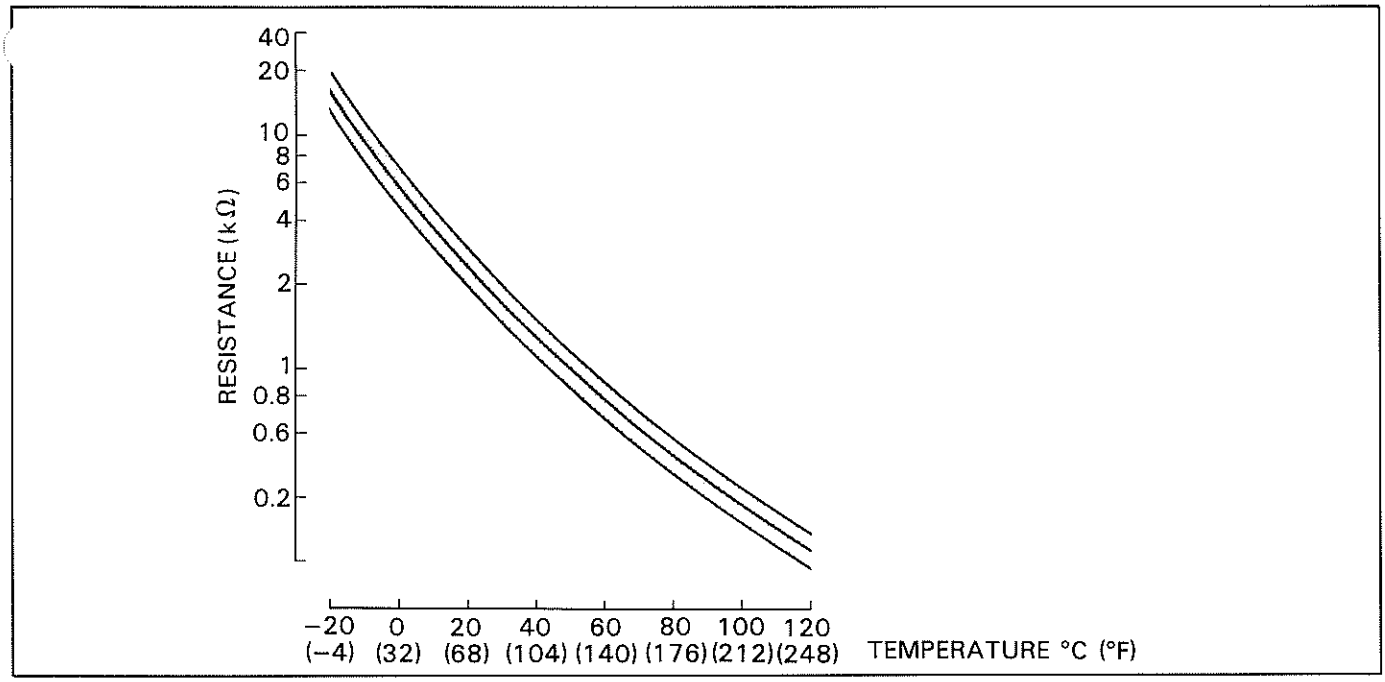
MEASURE RESISTANCE OF START INJECTOR TIME SWITCH

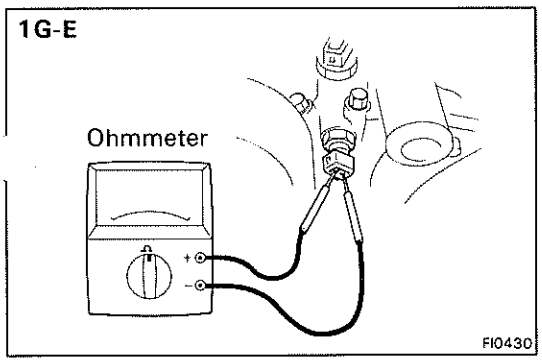
(a) Disconnect the connector.

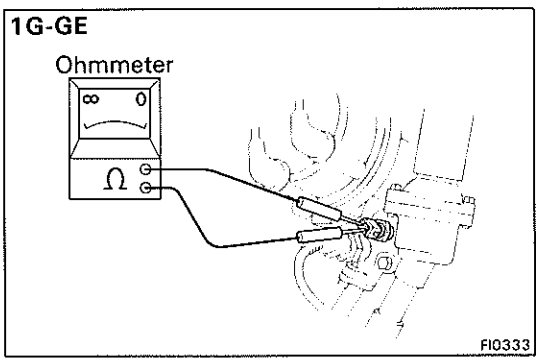
(b) Using an ohmmeter, measure the resistance between each terminal.

Terminals	Resistance (Ω)	Coolant temp.
STA – STJ	25 – 50	below 15°C (59°F)
	60 – 85	above 30°C (86°F)
STA – Ground	25 – 85	—

Water Thermo Sensor







INSPECTION OF WATER THERMO SENSOR

MEASURE RESISTANCE OF WATER THERMO SENSOR

(a) Disconnect the connector.

(b) Using an ohmmeter, measure the resistance between both terminals.

Resistance: Refer to chart

Computer (1G-E)

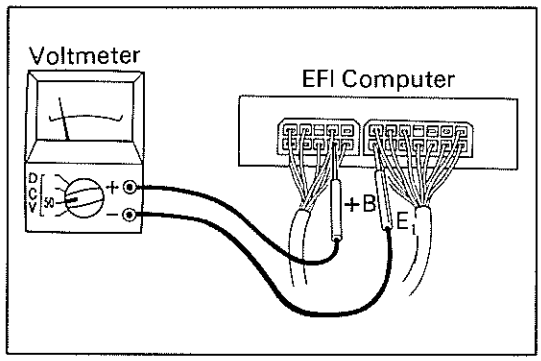
INSPECTION OF COMPUTER

1. MEASURE VOLTAGE OF COMPUTER

NOTE: The EFI circuit can be checked by measuring the resistance and voltage at the wiring connectors of the computer.

Check the voltages at the wiring connectors.

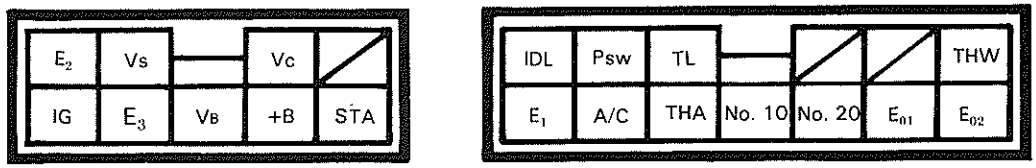
- Remove the glove box.
- Turn the ignition switch ON.
- Measure the voltage at each terminal.



NOTE: 1. Perform all voltage measurements with the connectors connected.
2. Verify that the battery voltage is 11 V or above when the ignition switch is ON.

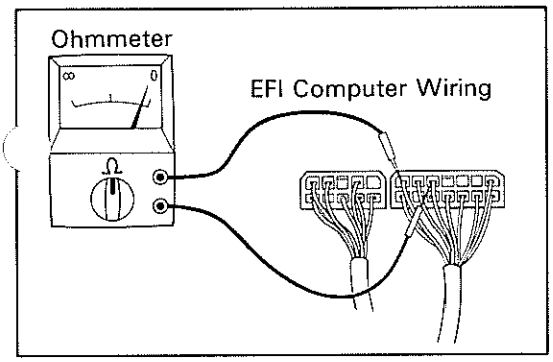
Connectors of EFI Computer

Symbol	Terminal Name	Symbol	Terminal Name
E_2	SENSOR GROUND	Psw	THROTTLE SWITCH
IG	IGNITION COIL	A/C	A/C MAGNET SWITCH
Vs	AIR FLOW METER	TL	THROTTLE SWITCH
E_3	SENSOR GROUND	THA	AIR TEMP SENSOR
VB	AIR LOW METER	NO. 10	INJECTOR
Vc	AIR FLOW METER	No. 20	INJECTOR
+B	MAIN RELAY	E_{01}	ENGINE GROUND
STA	STARTER SWITCH	THW	WATER TEMP SENSOR
IDL	THROTTLE SWITCH	E_{02}	ENGINE GROUND
E_1	ENGINE GROUND		



FI0426

Terminals	STD Voltage	Condition	
+B – E_1	10 – 13	—	
IDL – E_1	8 – 13	IG S/W ON	Throttle valve open
Psw – E_1			Throttle valve fully closed
TL – E_1	8 – 13	IG S/W ON	
V_B – E_2	8 – 12	IG S/W ON	—
Vc – E_2	4 – 9		—
Vs – E_2	0.5 – 2.5		Measuring plate fully closed
	5 – 8		Measuring plate fully open
	0.5 – 2.5	Idling	
THW – E_1	0.5 – 2.5	IG S/W ON	Coolant temperature 80°C (176°F)
THA – E_2	2 – 6	IG S/W ON	Intake air temperature 20°C (68°F)
STA – E_1	6 – 12	IG S/W ST position	
No. 10 – E_1 No. 20	10 – 13	IG S/W ON	
IG – E_1	10 – 13	Engine running	



2. MEASURE RESISTANCE OF COMPUTER

CAUTION:

1. **Do not touch the computer terminals.**
2. **The tester probe should be inserted into the wiring connector from the wiring side.**

Check the resistance between each terminal of the wiring connector.

- Remove the glove box.
- Unplug the wiring connectors from the EFI computer.
- Measure the resistance between each terminal of the wiring connectors.

Resistances at Coputer Wiring Connectors

Terminals	Condition	Resistance (Ω)
IDL – TL	Throttle valve open	∞
	Throttle valve fully closed	0
Psw – TL	Throttle valve open	0
	Throttle valve fully closed	∞
Vc – E_2	—	100 – 300
Vs – E_2	Measuring plate fully closed	20 – 400
	Measuring plate fully open	20 – 100
V_B – E_2	—	200 – 400
THA – E_2	Intake air temperature 20°C (68°F)	2000 – 3000

Electronic Controlled Unit (ECU) (1G-GE)

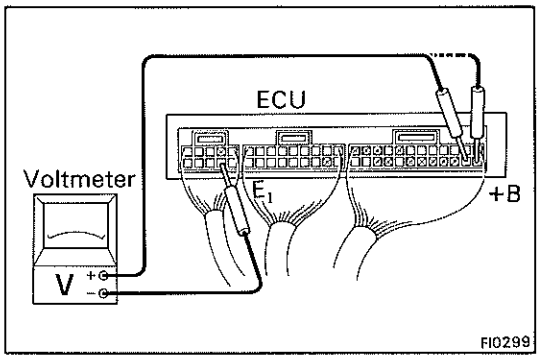
INSPECTION OF ECU

1. MEASURE VOLTAGE OF ECU

NOTE: The EFI circuit can be checked by measuring the resistance and voltage at the wiring connectors of the ECU.

Check the voltages at the wiring connectors.

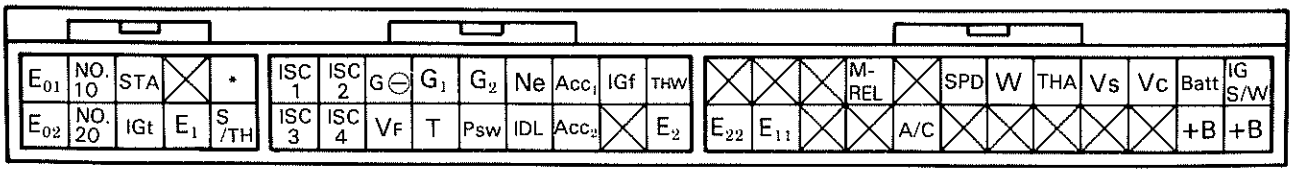
- Remove the glove box
- Turn the ignition switch ON.
- Measure the voltage at each terminal.



NOTE: 1. Perform all voltage measurements with the connectors connected.
2. Verify that the battery voltage is 11 V or above when the ignition switch is ON.

Connectors of ECU

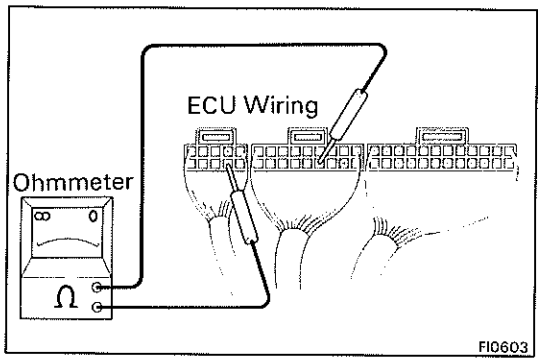
Symbol	Terminal Name	Symbol	Terminal Name	Symbol	Terminal Name
E_{01}	ENGINE GROUND	V_F	CHECK CONNECTOR	E_{11}	ENGINE GROUND
E_{02}	ENGINE GROUND	G_1	ENGINE REVOLUTION SENSOR	M-REL	MAIN RELAY COIL
NO. 10	INJECTOR	T	CHECK CONNECTOR	A/C	A/C MAGNET SWITCH
No. 20	INJECTOR	G_2	ENGINE REVOLUTION SENSOR	SPD	SPEEDOMETER
STA	STARTER SWITCH	Psw	THROTTLE SWITCH	W	WARNING LAMP
IGt	IGNITER	Ne	ENGINE REVOLUTION SENSOR	THA	AIR THERMO SENSOR
E_1	ENGINE GROUND	IDL	THROTTLE SWITCH	Vs	AIR FLOW METER
S/TH	INTAKE AIR CONTROL VALVE	Acc_1	THROTTLE SWITCH	Vc	AIR FLOW METER
ISC_1	ISC MOTOR	Acc_2	THROTTLE SWITCH	Batt	BATTERY +B
ISC_2	ISC MOTOR	IGf	IGNITER	IG S/W	IGNITION SWITCH
ISC_3	ISC MOTOR	THW	WATER THERMO SENSOR	+B	EFI MAIN RELAY
ISC_4	ISC MOTOR	E_2	SENSOR GROUND		
G ⊖	ENGINE REVOLUTION SENSOR	E_{22}	SENSOR GROUND		


E01 NO. 10 STA * E02 NO. 20 IGt E1 S /TH
ISC 1 ISC 2 G⊖ G1 G2 Ne Acc1 IGf THW ISC 3 ISC 4 VF T Psw IDL Acc2 E2
M-REL SPD W THA Vs Vc Batt IG S/W E22 E11 A/C +B +B

* Although, this position is connected, if is not related to the computer's function.

FI0274

Terminals	STD Voltage	Condition	
Batt – E_1	10 – 14	—	
+B – E_1		IG S/W ON	
IG S/W – E_1			
M-REL – E_1			
IDL – E_1	4 – 6	IG S/W ON	Throttle valve open
Psw – E_1	4 – 6		Throttle valve fully closed
Vc – E_2	4 – 6	IG S/W ON	—
Vs – E_2	4 – 5		Measuring plate fully closed
	0.02 – 0.08		Measuring plate fully open
	2 – 4	Idling	
	0.3 – 1.0	3,000 rpm	
THA – E_2	1 – 2	IG S/W ON	Intake air temperature 20°C (68°F)
THW – E_1	0.1 – 0.5	IG S/W ON	Coolant temperature 80°C (176°F)
STA – E_1	6 – 12	IG S/W ST position	
No. 10 – E_1 No. 20	9 – 14	IG S/W ON	
IGt – E_1	0.7 – 1.0	Idling	
ISC_1 – E_1 / ISC_4	9 – 14	IG S/W ON	
	9 – 14	2-3 secs, after engine off	
T – E_1	4 – 6	IG S/W ON	Service connector T_1 ↔ E_1 not short
	0		Service connector T_1 ↔ E_1 short
A/C – E_1	10 – 13	IG S/W ON	A/C S/W ON
	0		A/C S/W OFF
V_F – E_1	0 ↔ 5	Start engine (Throttle valve open)	
W – E_1	0	IG S/W ON	
	10 – 13	Start engine	



2. **MEASURE RESISTANCE OF ECU**

CAUTION:

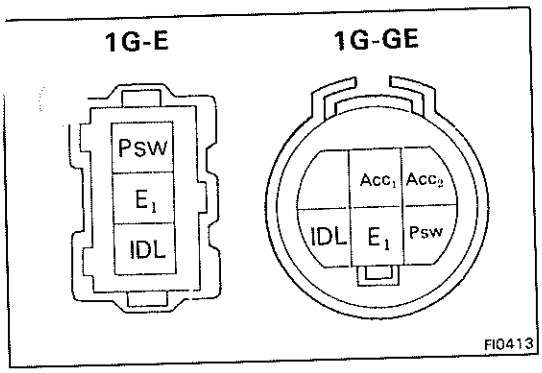
1. **Do not touch the ECU terminals.**
2. **The tester probe should be inserted into the wiring connector from the wiring side.**

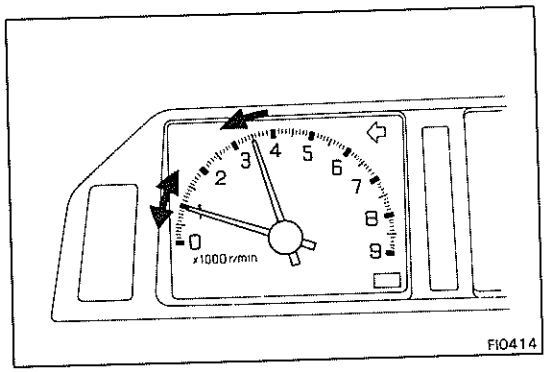
Check the resistance between each terminal of the wirning connector.

- Remove the glove box.
- Unplug the wiring connectors from the ECU.
- Measure the resistance between each terminal of the wiring connectors.

Resistances at ECU Wiring Connectors

Terminals	Condition	Resistance (Ω)
IDL – E_1	Throttle valve open	∞
	Throttle valve fully closed	0
Psw – E_1	Throttle valve open	0
	Throttle valve fully closed	∞
Vc – E_2	—	200 – 400
Vs – E_2	Measuring plate fully closed	20 – 600
	Measuring plate fully open	20 – 1200
THA – E_2	Intake air temperature 20°C (68°F)	2,000 – 3,000
G_1, G_2 – G⊖	—	140 – 180
Ne – G ⊖	—	
ISC_1, ISC_2 ISC_3, ISC_4 – +B	—	10 – 30





Fuel Cut RPM

INSPECTION OF FUEL CUT RPM

(a) Start and warm up the engine.

(b) Disconnect the throttle position sensor connector from the throttle position sensor.

(c) Short circuit terminals E_1 and IDL on the wire connector side.

(d) Gradually raise the engine rpm and check that there is fluctuation between the fuel cut and fuel return points.

NOTE: The vehicle should be stopped.

	A/C S/W	Fuel Cut rpm	Fuel Return rpm
1G-E	OFF	1,600 rpm	1,200 rpm
	ON	2,100 rpm	1,700 rpm
1G-GE	OFF	1,600 rpm	1,000 rpm
	ON	2,300 rpm	1,700 rpm